

Railways of Australia



NETWORK

Vol. 15 No. 8

September 1978

Price: 50 cents



THE CLYDE PARADE OF POWER



AUSTRALIAN NATIONAL RAILWAYS CL Class 3300/3000 HP



VICTORIAN RAILWAYS X Class 2200/2000 HP



COMALCO-WEIPA Model GT26C 3300/3000 HP



AUSTRALIAN NATIONAL RAILWAYS NJ Class 1650/1500 HP



W.A.R. D Class 2200/2000 HP

In 1951, Clyde delivered the first Australian-built diesel-electric locomotive to the Commonwealth Railways. Twenty-six years and over eight hundred diesel locomotives later, Clyde can be proud of the role it has played in the economic and industrial development of Australia.

Today there are Clyde-GM-powered diesel-electric locomotives operating on the Railways of the Commonwealth, Victoria, Queensland, Western Australia, New South Wales, New Zealand, Pakistan and Hong Kong. A brand new line of diesel-electric locomotives—the "Dash-2" Series, ranging in size from 1500 to 3000 h.p.—is helping to revolutionize Australian railroad economics.

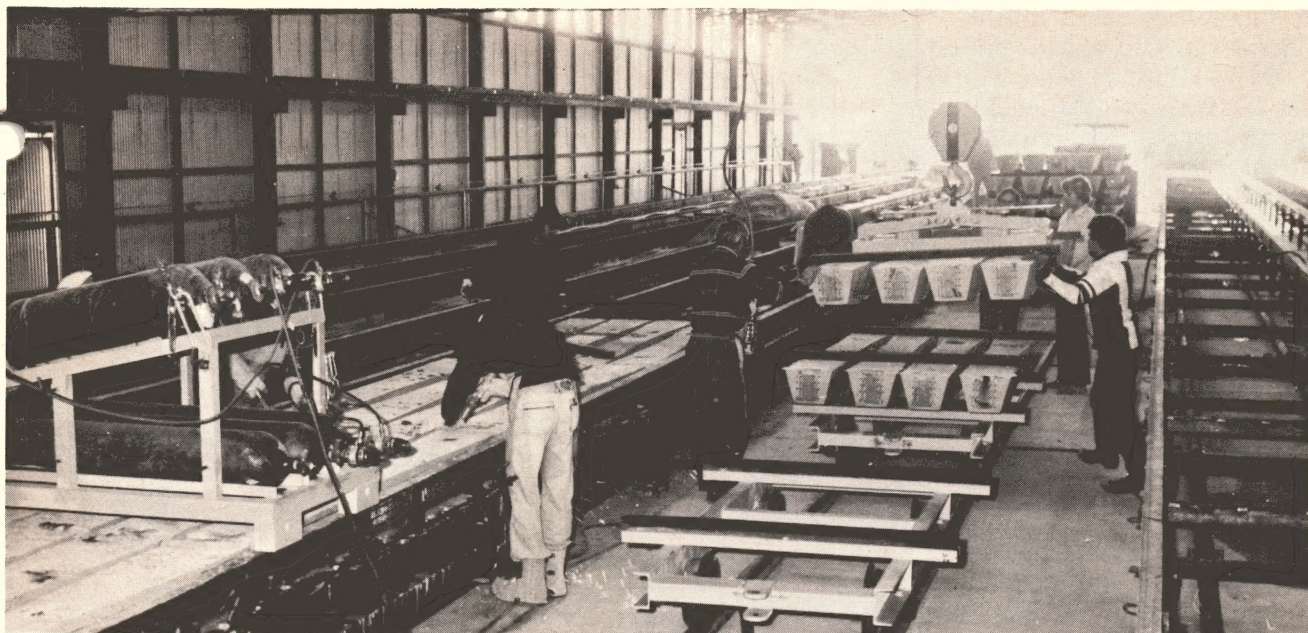
All convincing evidence that Clyde-GM is the pacesetter for Australia.

**THE CLYDE ENGINEERING
COMPANY PTY. LIMITED**
HOME OF THE DIESEL LOCOMOTIVE
Clyde, N.S.W. Telephone 682-2111
A MEMBER OF THE CLYDE INDUSTRIES GROUP
OF COMPANIES



In association with





The first line of concrete sleepers being manufactured at Meckering for the Kwinana-Koolyanobbing standard-gauge project. A total of 960,000 sleepers are to be produced during the five-year rehabilitation programme.



The "Eastern Explorer Rail Pass", available in Australia to all travellers on 1 July, provides 21 days first-class rail travel, including reserved seats, for only \$150. Patrons using the Pass can travel as far north as Brisbane in Queensland, as far west as Port Pirie in South Australia, and anywhere in New South Wales or Victoria.

The "Eastern Explorer Rail Pass" includes interstate and intrastate travel, as well as travel throughout the metropolitan areas of Brisbane, Melbourne and Sydney. It also applies to road coach services owned or operated by Government-owned railways.

Rail travellers using the Pass will be able to travel on several of Australia's internationally recognised trains such as the "Indian-

ANR has called tenders for the manufacture of a further 70,000 steel sleepers for a 45 km section of rail track in Central Java, Indonesia. ANR control an aid programme to the Indonesian Railways on behalf of the Australian Development Assistance Bureau as part of the Federal Government's Colombo Plan aid. Steel sleepers are used widely by Indonesian Railways due to a shortage of suitable local timbers and problems that prevail in Indonesia in relation to concrete sleepers.

Following a marked upturn in northbound freight traffic in recent weeks, ANR has resumed all scheduled freight train services on the Central Australia Railway and believes much of the new traffic has been won from road hauliers. The re-commencement of prime frozen-beef movements from the Alice Springs abattoir has bolstered southbound freight movements. ANR has recently constructed a 400-metre spur line to the abattoirs which has greatly facilitated easier handling of meat stocks onto ANR refrigerated containers.

VicRail Chairman, Mr A. G. Gibbs has announced that the programme to upgrade suburban rolling stock is not coming to an end despite the fact that delivery of VicRail's first order of 50 silver trains is nearing completion.

Government approval, he said, has already been given for the expenditure of \$20 million to extend the existing order to include an additional 54 motor carriages, the

Pacific", "Southern Aurora", "Brisbane Limited" and "The Overland".

equivalent of 9 extra trains. These will ensure a continuance of supply of silver trains pending deliveries under a contract for a further 50 new trains, tenders for which are presently being examined, and which will cost in the order of \$96 million.

In addition to providing additional modern rolling stock, the 54 extra motor carriages will be "updated" to have the same acceleration rate and carriage arrangements as those in the tender presently being examined. These 54 motor carriages, those in the new 50-train order, as well as the carriages of existing silver trains, will be so marshalled as to provide trains of two balanced units of three cars each. This arrangement will facilitate operation of the Underground Loop, the proposal being to run trains anti-clockwise in the morning and in the reverse direction in the afternoon, the better to cope with passenger flow.

Electrification of the PTC's Illawarra line between Sutherland and Waterfall will be completed by April 1980 at a cost of about \$5 million. More than \$29,000 has been spent on the photogrammetry survey of the line as a prelude to major construction work. About \$470,000 will have been spent on the first stage of the project by the end of June.

The overall project will involve design, surveys, extension of Loftus station platform, the provision of new substations, overhead wiring structures and catenary wires, signalling relays and cables.

The "Eastern Explorer Rail Pass" is available between 1 July and 30 November 1978.

When this section of track is electrified, the PTC's electric trains will be able to operate over a 460 kilometre route network which extends north to Gosford, west to Lithgow, south to Campbelltown and, on the busy Illawarra line, to Waterfall.

Special "packs" have been prepared by the Public Transport Commission for issue to school principals and teachers publicising PTC "Educational School Tours".

The brochures included in the kit outline the many tours specially prepared for school children of all ages, including six Camping Tours to Queensland and Victoria run by the PTC in conjunction with Greyhound Coaches.


Members of the Commission's Educational Tours Section regularly visit schools to distribute the publicity material and to promote tours. Last year, over 30,000 school children travelled on special tours arranged by the PTC.

Acting Minister of Railways in New Zealand, Mr McCready, has announced that a further ten new diesel locomotives have been ordered for main line freight trains on New Zealand Railways.

Ten 1500 hp locomotives were ordered late last year from General Motors, Canada, and that contract has now been extended taking the value of the order, including spares to over \$16m. The first of the new locomotives, to be classified as Df, are expected to arrive in New Zealand early in 1979.

The Window Seat

RAILWAYS OF AUSTRALIA
E

21 days



Eastern Explorer Rail Pass

NAME

SIGNATURE

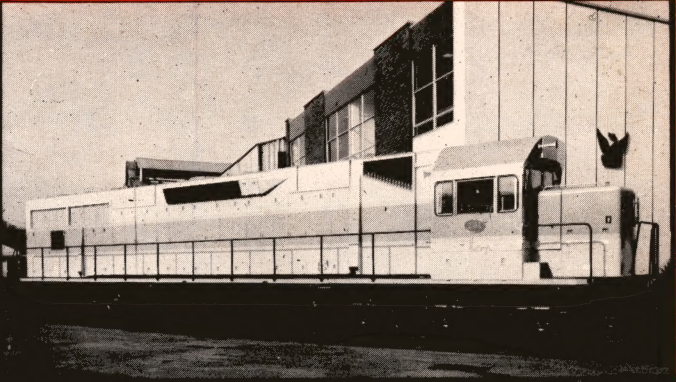
FIRST DAY

LAST DAY





Q.R. Model GL26C 2200/2000 HP



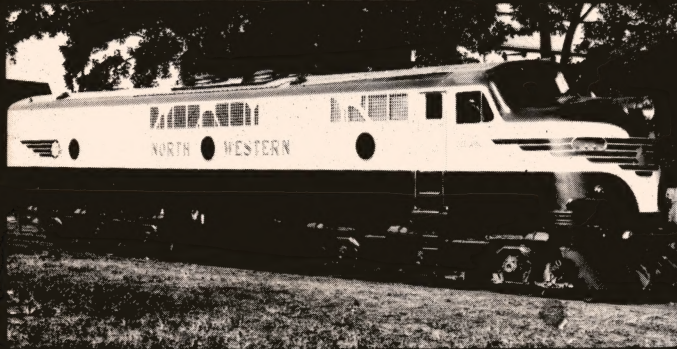
W.A.R. L Class 3300/3000 HP



HONG KONG GOVERNMENT RAILWAYS Model G16C 1950/1800 HP



VICTORIAN RAILWAYS Y Class 650/600 HP



PAKISTAN WESTERN RAILWAY Model ML3 1650/1500 HP



P.T.C. OF N.S.W. 422 Class 2200/2000 HP



B.H.P./WHYALLA Model G12B 1425/1310 HP



NEW ZEALAND RAILWAYS Model G12A 1425/1310 HP



Q.R. Model GL18C 1100/1000 HP



CANEFIELDS AND INDUSTRIAL Model DHI-71 220/170 HP



King's Cross station, Sydney's Eastern Suburbs Line

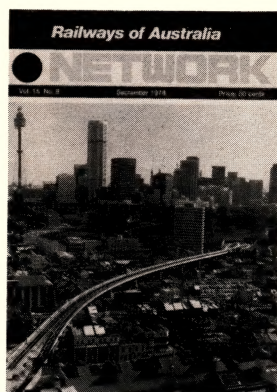
Railways of Australia



NETWORK

Vol. 15 No. 8

September 1978



Railways of Australia 'Network' is published by the Railways of Australia Committee, 4th Floor, 325 Collins Street, Melbourne, Vic. 3000.

Railways of Australia is an association of the various government-owned railway systems, comprising the following:

- Australian National Railways
- Public Transport Commission of New South Wales
- Queensland Railways
- Victorian Railways
- Western Australian Government Railways

Contributions: Individuals or organisations are invited to submit editorial matter and photographs, suitably captioned, covering any phase of railway activity, for consideration for publication. Contributions should be addressed to The Editor, Railways of Australia 'Network', 4th Floor, 325 Collins Street, Melbourne, Vic. 3000. Please enclose a stamped addressed envelope for return of material not published.

Subscriptions: Within Australia, \$7.50 per annum (posted). Overseas, A\$10 per annum (posted surface mail). Direct enquiries and remittances to the Circulation Manager.

Printed by Lithocraft Graphics, 127-133 Thistlethwaite Street, South Melbourne, Vic. 3205. Telephone 699 7955

Railways of Australia Network

CONTENTS

From the Executive Director's Desk	
National Co-ordination and Co-operation	5
Sydney's Eastern Suburbs Railway	7
Melbourne's Loop — a wider choice of City destinations	13
The Finnish State Railways	19
Privately Owned Freight Wagons on the Queensland Railways	23
Westrail Activities	25
PTC Reports	26
The "John Whitton Bridge", Meadowbank	28
New Wagon Repair Workshops	29
The Window Seat	31

OUR COVER

Sydney's imposing skyline makes a dramatic backdrop for the graceful Eastern Suburbs Railway viaduct across the Woolloomooloo Valley.

Advertising Enquiries should be addressed to

The Advertising Manager, Railways of Australia 'Network', 325 Collins Street, Melbourne, Vic. 3000. Telephone 61 2545

or the following representatives:

N.S.W.: Patrick Carr, Commercial Union Assurance Building, 109 Pitt Street, Sydney, N.S.W. 2000. Telephone 232 1026, 232 8072

Qld.: Media Resources Queensland, 715 Sandgate Road, Clayfield, Qld. 4011. Telephone 262 6798

S.A.: Cotswold Media Services, Castle Close, Crafrers, S.A. 5152 Telephone 339 3427

Vic.: Leonard Sparks & Associates, 126 Wellington Parade, East Melbourne, Vic. 3002. Telephone 419 2595

Items appearing in *Railways of Australia 'Network'* may be reproduced by editors; acknowledgement of the source is requested.



*"Indian-Pacific" travelling on section of the new paved concrete track (PACT)
in the Blue Mountains, N.S.W. See also "Network", July 1978.*



National Co-ordination and Co-operation

Since my report in the July 1978 issue of *Network* outlining "Transport Planning Policy and Procedure" at the Commonwealth and State level, it has been suggested from several sources that I might also indicate the various management areas of intersystem planning and co-ordination within the Railways of Australia intersystem network.

The history of intersystem conferences dates back to 1898 when Railway Commissioners first met, and subsequent conferences were held at approximately eighteen month intervals.

The advent of standardisation of gauge between New South Wales and Victoria in 1962, the introduction of bogie exchange and the extension of standard-gauge services to the Sydney-Perth link in 1969 have brought about a vast increase in intersystem working, with an attendant need to standardise many aspects of operations, procedures and equipment which were not previously standard, and this in turn requires more frequent consultation of Railway Officers.

It is interesting to note that in 1900 the Commissioners discussed bogie exchange and the inherent difficulties associated therewith, and "re-affirmed the opinion that the only solution to difficulties created by various railway gauges is the adoption of a uniform gauge, fully dealt with in a report of August 1897, the adoption of which is looked forward to by the Railway authorities. Meanwhile new rolling stock is to be built to enable ready adoption to the change of gauge."

Seventy-eight years later, we are still confronted with the difficulties created by different gauges, still endeavouring to overcome the problems associated with bogie exchanges . . . and it could appear still inhibited by too many politicians and their advisers with myopic vision.

However, in order to promote and co-ordinate intersystem ac-

tivities, the Commissioners extended the work of the Australian and New Zealand Railways Conferences Secretariat in 1975 by establishing a *Railways of Australia Committee*. The responsibilities of this organisation embrace the promotion, examination and co-ordination of intersystem activities, conveying, monitoring and, where applicable, implementing the intersystem policy decisions and directions of the Commissioners of the Australian network, servicing the requirements of intersystem clients and prospective clients, and promoting the Railways of Australia as a national integrated network.

Over recent years the Commissioners of the Railways of Australia have met more frequently, and they now meet approximately five times per year to discuss policy matters associated with Railways of Australia, and Rail Group matters as an advisory committee to the Australian Transport Advisory Council (ATAC), and as Directors of the Australian Railway Research and Development Organisation (ARRDO). Included in these meetings is the annual *Commissioners' Conference* which also includes the General Manager of the New Zealand Railways.

The Australian and New Zealand Railways Management Conference is held annually to review and analyse practices and procedures, and to recommend and implement decisions. This conference is attended by heads of branches representing Marketing, Operations, Mechanical Engineering, Civil Engineering, Signals and Communications, and Finance and Accounting areas. Policy recommendations from this conference are submitted to the Commissioners.

In addition to the Commissioners' and Management Conferences, the following Committees and Officers representing the various Systems meet at regular intervals or as required:

Systems Planning and Development Committee — This Committee, consisting of Planning Officers, examines matters of concern to the Railways Group Co-ordinating Committee (RGCC) who submit same to the Railway Group (Railway Commissioners and the Secretary of the Commonwealth Department of Transport) for recommendation to the Australian Transport Advisory Council (ATAC). Reference to the above groups was made in the July issue of *Network*.

Landbridge Operating Committee — The Officers of this Committee monitor and review transit times, train performance, through-train working, bogie exchange operations, wagon availability and associated matters relating to freight movement. This Committee also meets regularly with the motor-car industry representatives.

Marketing and Operating Committee — This Committee includes Marketing, Operating and Mechanical heads of branches and examines all intersystem aspects pertinent to their respective branches. It meets regularly with representatives of the National Freight Forwarders Association.

Commercial and Marketing Committee — Members of this Committee meet to review rates and charges applicable to freight and passenger traffic and discuss service, marketing strategy, etc.

Accounting Officers — Intersystem accounting matters, allocation of revenue, documentation and related matters are the responsibilities of this Committee.

Industrial Officers — This Committee is responsible for industrial matters, service conditions, etc. of common interest.

Passenger Officers — These Officers review all matters relevant to passenger traffic and services.

Rating Officers — Following a freight and/or passenger review, these Officers calculate and apportion intersystem charges and revenue which may vary as a result of the review.

Management Services and Data Processing Officers — This Committee meets as required to review developments in this specialist field.

Laboratory Officers — These Officers meet on an *ad hoc* basis and review scientific developments and matters of common interest.

Design Officers — This also is an *ad hoc* Committee which meets to review standardisation of design features.

Rolling Stock Sub-Committee — Regular reviews of the national rolling stock requirement is carried out by this Committee.

Vehicle/Track Studies Co-ordinating Committee — The Railways of Australia have embarked upon a vehicle/track study programme which will benefit Australia Railway Systems in the identification and correction of problems now experienced over a range of gauges, vehicle types, track conditions and loadings.

The study is divided into two segments —

(a) Evaluation of alternative track structure forms as they relate to track design criteria being conducted in Western Australia.

(b) The effects of interaction between vehicle and track being carried out in New South Wales.

The Co-ordinating Committee is responsible for the oversight and direction of the above studies with the assistance of two working committees dealing with the more specific details of programme implementation.

Dangerous Goods Sub-Committee — This Committee is responsible for the development of a Railways of Australia Code of practices and conditions for the carriage of dangerous goods by rail.

Railway Institute Officers Ambulance Officers

The Commissioners encourage the participation of employees of the respective Systems in interstate competition in the various fields of sport and first aid. The above subsidiary Committees plan and organise the annual competitions and review other relevant issues associated with the activities of railway institutes and general area of first aid.

Task Forces — In addition to the above conferences and committees, specialist Railways of Australia task forces are appointed from time

to time to undertake special projects. Studies currently being undertaken are:

- Central control of intersystem rolling stock.
- Through working (intersystem) of locomotives.
- Uniform intersystem costing procedures.
- Intersystem documentation and statistics.
- Survey of Executive Development Needs.

In addition, Railways of Australia are represented on approximately 150 committees of the Standards Association of Australia.

From the foregoing it will be seen that continuing endeavour is being made to establish an integrated railway network which will be competent to perform efficiently its role in the national transport task.

We must not, however, overlook the necessity of translating words into action.



B. M. HOGAN
Executive Director

(continued from page 32)

The N.S.W. Government has taken delivery of the first thirty diesel locomotives designed and built by Commonwealth Engineering (NSW) Pty Ltd.

Speaking at the official handover ceremony at the Comeng works at Granville, the Minister for Transport, Mr Peter Cox, said the order was the first of its kind since 1970. The new diesel electric locomotives would be used for the haulage of both freight — particularly coal — and passenger trains.

“With the development of the State’s coal resources and the coal export market, increased freight business of the Public Transport Commission and increased patronage on public transport, particularly in country areas, it is essential that we have modern, reliable locomotives available.”

The “80 Class” locomotives are powered by a 12-cylinder 251 Alco diesel engine rated at 1,600 kW (2,000 h.p.), capable of speeds up to 130 km/h. The electric traction equipment was supplied by Melco Japan, who have also provided the electrical equipment for the double-deck suburban and interurban

electric trains manufactured by Comeng.

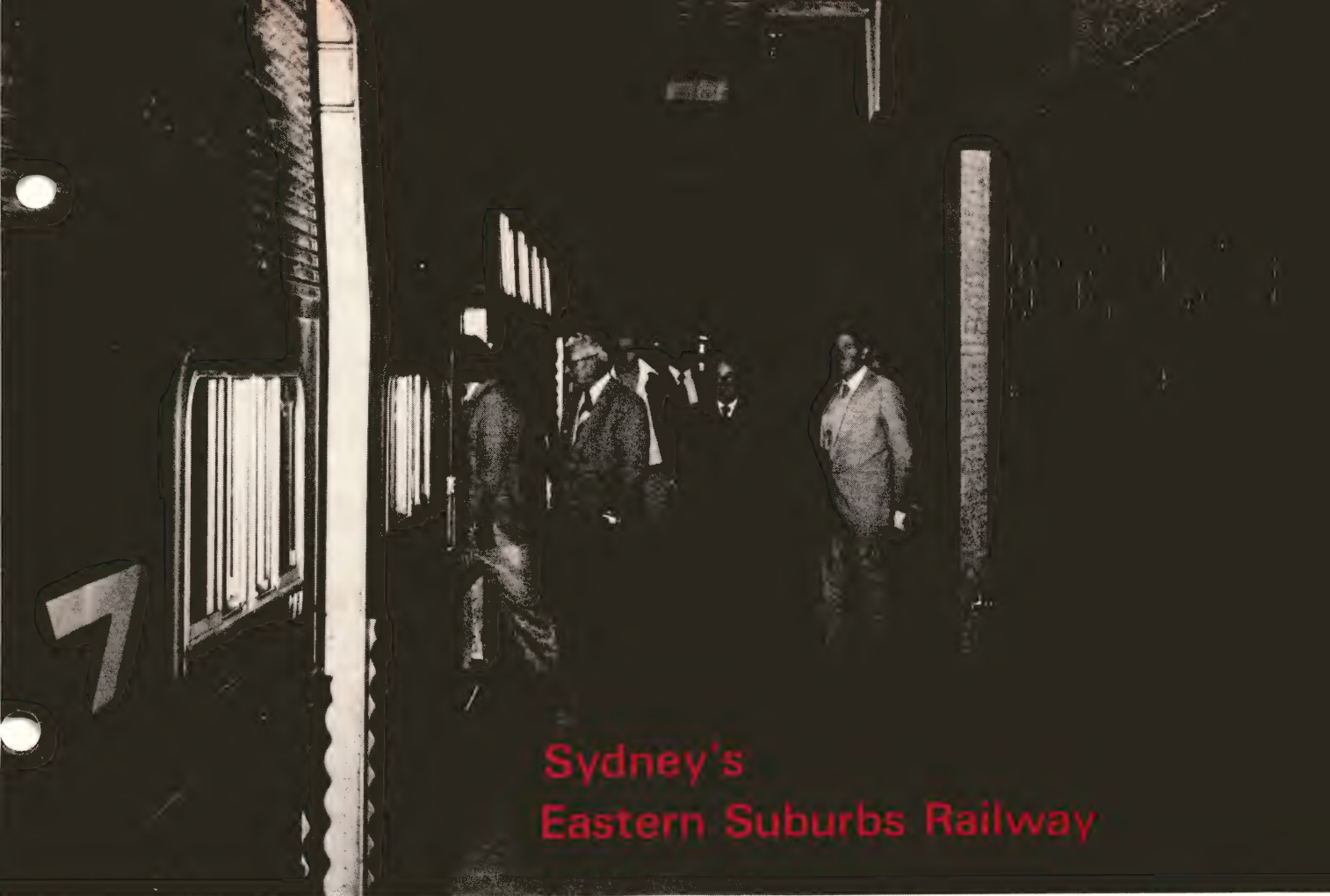
Many new and innovative features have been incorporated to ensure reliable operation, ease of maintenance and long periods between overhauls. Special attention has also been paid to crew comfort. The two driving cabs are fitted with individual air-conditioners and are insulated against heat and noise. A toilet and wash basin are also provided. Other features include

refrigerator units, hot plates and windscreen washers and wipers.

The new locomotives will be delivered progressively at the rate of one every two weeks to meet an urgent need to replace “43” and “44” class units which have been in service over twenty years. The total order is worth almost \$25 million.

Comeng is also building ten “85” class electric locomotives, the first of which will be delivered in February 1979.





The Eastern Suburbs Railway, a new \$168 million line linking Sydney's eastern residential areas with the bustling city, will be opened early in 1979.

Initial operations will consist of a fast shuttle service by modern double-deck trains operating between Central and Bondi Junction, serving the intermediate stations of Town Hall, Martin Place, Kings Cross and Edgecliff, and both Edgecliff and Bondi Junction stations will incorporate modern interchange facilities, enabling passengers to transfer with ease between buses and trains.

Journey times will be eight minutes only between Central and Edgecliff, 11 minutes between Central and Bondi Junction, and only seven minutes between Bondi Junction and Martin Place.

Eastern Suburbs Railway services will be integrated later with Illawarra Line operations, at which time new Redfern platforms will be brought into use. The railway represents one of the largest engineering projects undertaken in recent years by the NSW government and brings to fruition a project which had been planned for over a century.

Route and Construction

The 10km line consists basically of seven underground stations linked by tunnels, viaducts across two valleys, and one other short above-ground section. The route was determined to some extent by the

undulating terrain of Sydney's eastern suburbs and the need to avoid building foundations and poor ground material, where possible.

The ESR branches off from the existing metropolitan rail network at Erskineville. The new line descends rapidly down a ramp (with a grade of 1/32) into twin box tunnels extending 1.3 km beneath Alexandria Yard to Redfern Station. These tunnels were constructed by the "cut and over" method because of difficult ground conditions in an area of water-laden alluviated soil. Extensive sheet piling was required as this method was used at depths of up to 16m. This work proved to be very difficult and expensive.

Redfern Station platform, located 15m below ground level, marks the point where it became

A recent inspection of ESR was made by the Hon. Peter Cox, Minister for Transport and Highways, and PTC Commissioners.

practical to use conventional means of drilling and blasting in the tunnelling works.

This method was used in the tunnels from Redfern to the Domain portal at Woolloomooloo and beneath Kings Cross. Generally, conventional tunnelling involved full-face firing of a 2.8m round (120 holes, and up to two rounds per shift). Monitoring of ground vibration was necessary in most areas to protect buildings. The roof of the tunnels was usually supported with 4m rock bolts; and the tunnels were finished with a concrete lining, varying in thickness from 200mm to 600mm.

The tunnels between Edgecliff and Bondi Junction were formed by the use of a 179-tonne boring machine known as the "Mole". In principle, the machine consists of a rotary cutting head pressed onto the tunnel face by a large hydraulic ram. The 4.5m diameter cutting head, driven by large hydraulic motors, gouged the face away at a rate of 2m per hour.

Tunnels are usually wet areas



Views of the ESR at Rushcutters Bay, showing the viaduct (left) with

and, consequently, they must be drained. In the ESR, weep holes were left in the walls and the water drained to pump chambers located at the lower points of the system. These chambers, up to 15m below sea level, have pumps which are automatically activated as the water level rises. The water is pumped to the surface and discharged into stormwater drains at four locations.

Supports

During construction of the line it was necessary to support building footings under the city and at Kings Cross. One column footing of the State Theatre building located directly above the crown of the tunnel was underpinned. This necessitated an inclined drive up to the footing and the excavation of a chamber around it. Steel beams were installed on each side of the footing on concrete pads clear of the tunnel and the footing was gradually picked up on needle beams supported by flat jacks.

A more complex effort was necessary at Kings Cross where the rock above the station area was pre-stressed in order to minimise settlement when the arches were exca-

vated. The first move was to install heavy steel beams and columns on flat jacks in the column drives. The beams were surrounded in concrete, and grout forced between the concrete and the rock. The flat jacks were pressurised and had the effect of raising the roof level about $\frac{1}{4}$ inch. The centre arch was then excavated and lined and later the outer arches were excavated and lined. The maximum final settlement recorded at street level was about $\frac{3}{8}$ inch, and no damage was caused.

Further construction problems were encountered where the tunnels crossed beneath the existing City Circle tunnels just east of Martin Place. Extensive steel supports were required to prevent subsidence of the overlying rock which is heavily stressed by City Circle train loads less than 3m above the new tunnels.

Where the ESR passes directly beneath the new Theatre Royal, the tracks were laid on a special sound and vibration absorbing base.

Viaducts

The above-ground structure over Woolloomooloo is a pre-stressed concrete continuous box-girder

viaduct with ten spans varying in length from 43m to 50m. Soil studies showed this area to be saturated alluvial material, so the viaduct is supported on cased piles which extend up to 21m to the bedrock.

The Rushcutters Bay viaduct also traverses a deep sand basin, overlying hard sandstone up to 30m below the surface. It was necessary to design one of the supports of this viaduct as a portal frame to allow the Eastern Expressway to pass below.

In designing the viaducts, great thought was given to the aesthetics of the structures and minimisation of noise nuisance. The result was a three-cell continuous girder with tapered underside and cantilevered "wings".

Other works

As the tunnel and viaduct work progressed, installation of the continuously welded railway track, supported on timber sleepers embedded in concrete, followed. Access was then available for signalling and overhead wiring which were installed from the special work trains.



the White City tennis courts beyond, and city landmarks (right).

The overhead wiring provides traction power at 1,500 volts DC from the existing Prince Alfred sub-station and from a new sub-station constructed at Edgecliff.

Station Construction

Construction of the Redfern and Central Stations, located on the eastern side of the existing railway was commenced in the period 1947-52. At that time, the stations were excavated by open-cut methods, and the steel-frame structures of the stations were erected. When work ceased in 1952 the steel was left exposed. These steel structures had corroded badly by 1967 and major remedial work was required.

Whereas these stations were excavated from the surface down, the lower levels of Martin Place, Kings Cross and Bondi Junction stations were excavated and lined by tunnelling methods. However, the concourses were constructed in excavations opened from the surface, and are connected to the platform level by escalator shafts. Since it was not feasible in the Martin Place and Kings Cross excavations to use explosives, the concourse excavations

were completed by using large dozers with ripping attachments and hand-held pneumatic tools.

Not only will the stations on the Eastern Suburbs Railway be the most modern in Australia, but with their bright, spacious surroundings and striking colour schemes, they will also be the most attractive.

Their design makes passenger movement from street level (or bus interchange) to platforms rapid and easy. For passenger convenience the PTC installed 39 escalators at ESR stations at a cost of \$8.2 million.

Each station has its own distinctive colour scheme for immediate recognition. In addition, station names in contrasting gradated colours are repeated along platform lengths in banks of three names, thus providing passengers with quick identification of the stopping place.

Black studded rubber tiling is used extensively for platform surfaces because of its long life in such conditions, and its non-slip and noise-reduction qualities.

At *Central* the concourse and platforms are located below Chalmers Street, and served by four escalators.

The concourse provides ready access to the other electric train platforms, to country and interstate trains, and to Broadway through the Devonshire Street tunnel.

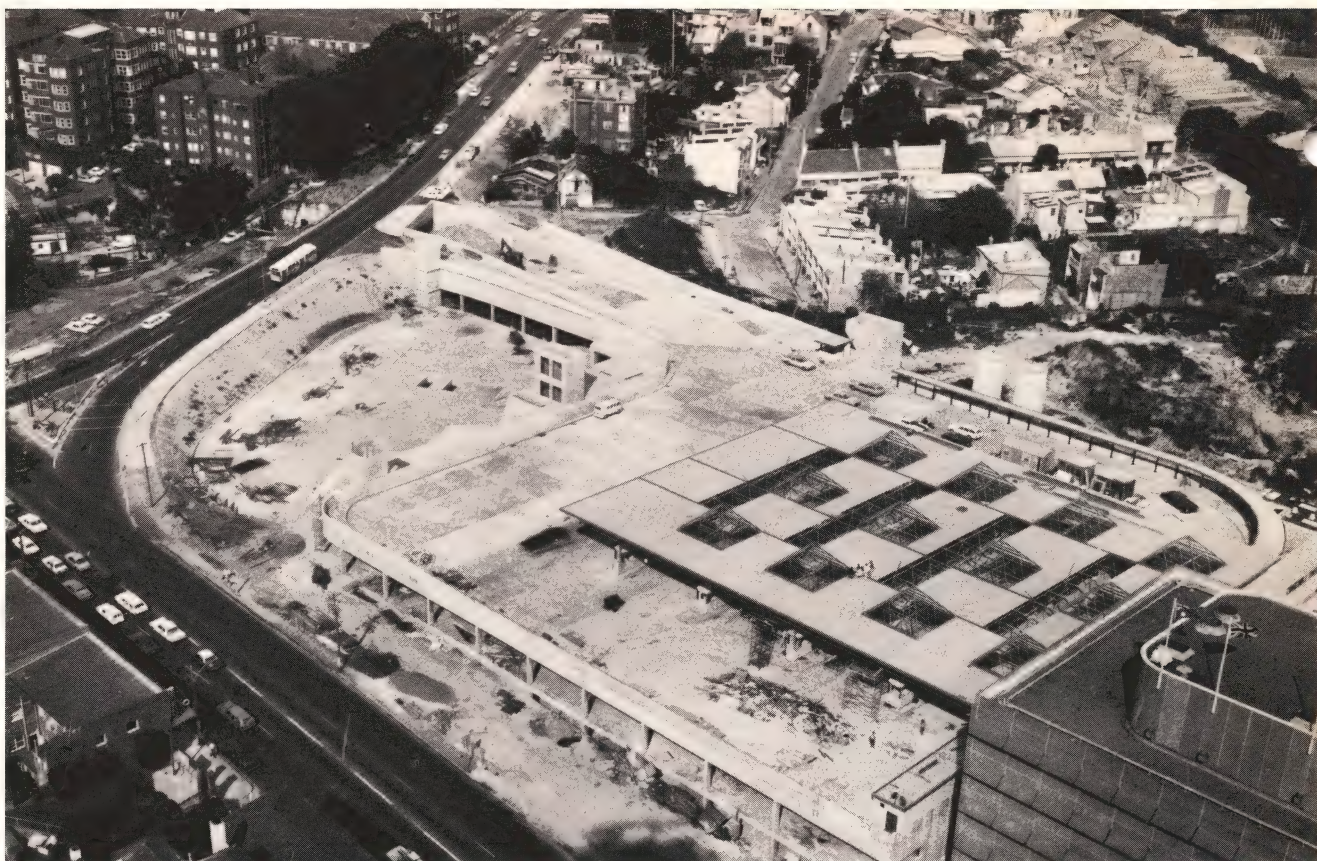
The ceiling is metal-ribbed in the station identification colour — green. Walls and columns are finished in green and white tiles and the concourse, like the platform, is paved with studded rubber.

Chalmers Street, above the station, is to be restored, and will incorporate a pedestrian mall and bus shelters roofed with translucent acrylic.

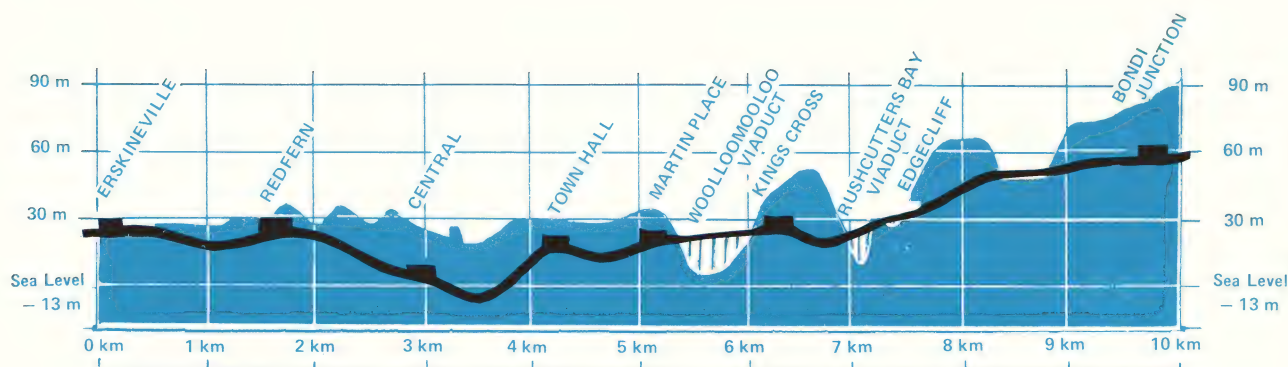
At *Town Hall* the two ESR platforms were built during construction of the City Railway fifty years ago. The previously unused platform has been redecorated with yellow plywood ceilings, and columns have been faced with stainless steel. Four new escalators integrate the new platform with the existing Town Hall system.

At *Martin Place* the station has been designed to cater for the large number of city workers who will use it during peak travelling times.

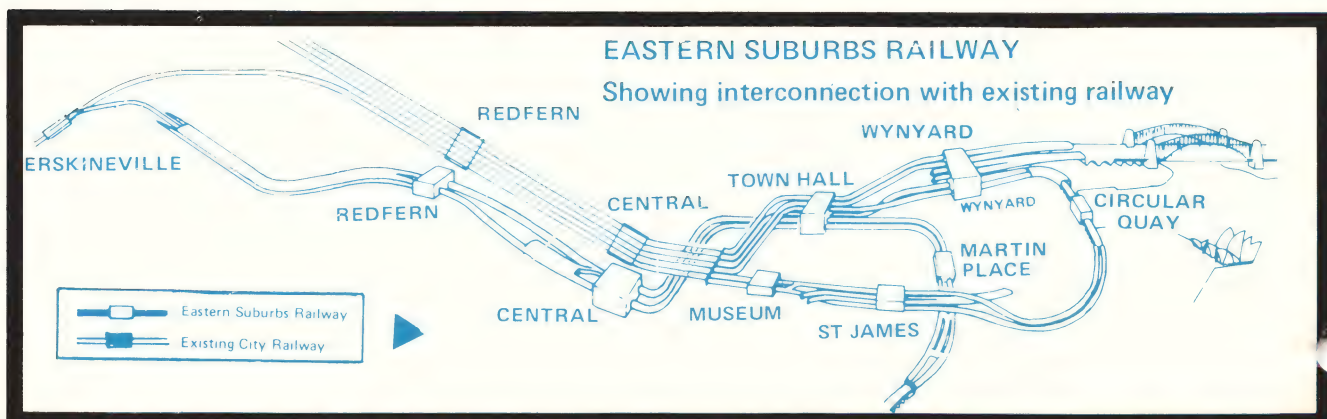
The predominant colour throughout is red, with extensive



Bus interchange deck under construction at Edgecliff. Short stairways lead from the bus platform to gallery level. Escalators connect gallery and concourse, and concourse and train platforms.



PROFILE OF EASTERN SUBURBS RAILWAY TUNNELS



use of white terrazzo and off-form finished concrete.

Immediately below street level, between Phillip and Macquarie Streets, is the gallery level entered by stairs from the recently completed plaza. It will feature kiosks, concessions and an open sidewalk-type cafe. From here, passengers will be carried by three escalators to the concourse where the ticket offices and barriers are located. The terrazzo-paved concourse also connects to the lower sections of Martin Place through an arcade lined with exposed aggregate panels matching in colour the plaza above. Six escalators lead down from the concourse to the island platform through shafts lined with red glazed tiles.

Ventilating air for the station is drawn from the Domain through tunnels passing under Sydney Hospital.

The Kings Cross station is located below Victoria Street which was restored after construction had taken place. The concourse is entered by an arcade from Darlinghurst Road or by stairs on each side of Victoria Street. Access will also be provided from Brougham Street to serve residents of the new Woolloomooloo redevelopment.

The concourse is paved with grey-green terrazzo, forming a background for a colour scheme of ofange which appears in the plywood ceilings and tiled columns. Walls are lined with white tiles and precast terrazzo panels.

Booking office windows have surrounds of blue moulded panels which are used throughout the ESR system to identify ticket-selling areas.

Three escalators operate from Darlinghurst Road to concourse level and the platform is reached by a further four escalators.

Edgecliff is one of the two bus/rail interchange stations on the ESR, with an extensive bus deck above the station. The station is in a development project of the Church of England Glebe Administration Board, with the PTC owning strata title to its sections of the building.

From the bus platform, stairways lead to the gallery and thence by stairs and escalators to the concourse area at New South Head Road level. Both gallery and concourse are paved with terrazzo and the walls are lined with buff-coloured exposed aggregate render.



Overhead electrical wiring being erected on the Woolloomooloo viaduct from the top of a special worktrain.

Columns are faced with attractive glazed tiles of deep blue — the basis for the station colour scheme.

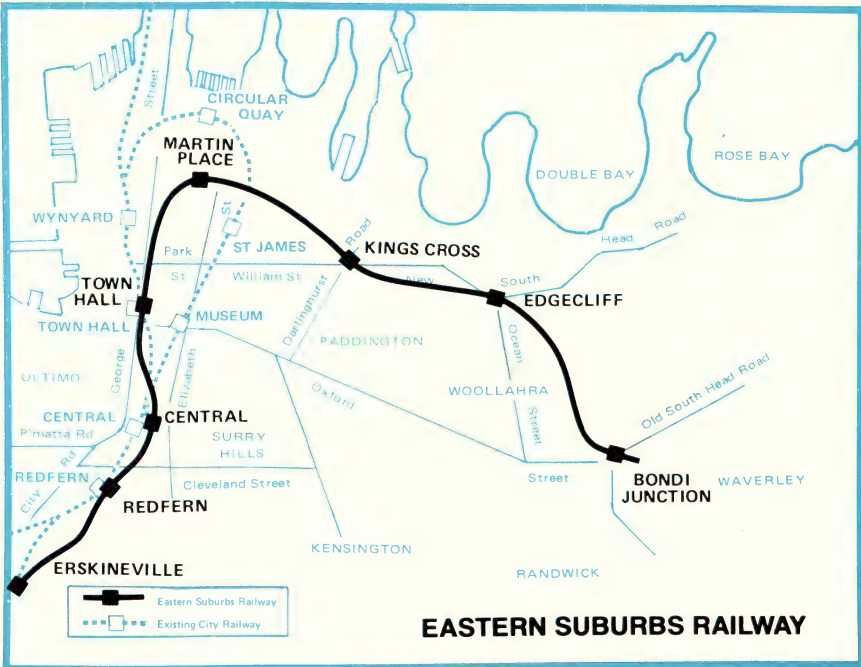
Four escalators lead to the platform level which, like the concourse and gallery, is finished with ivory-coloured plywood ceilings allowing total access to the necessarily complex services.

Bondi Junction is the other bus/rail interchange and terminus for the ESR line. Two escalators, complemented by stairs, operate between the bus platforms and the concourse which is lined with light-grey exposed aggregate render. The ceiling is bright yellow metal slats with recessed lighting coves. Four escalators run from the concourse, through shafts with yellow moulded

plywood ceilings to the rubber paved platform. The light grey exposed aggregate walls form a backdrop to the deep-orange glazed tiled columns.

Lighting at all the ESR stations, particularly platform-edge illumination, is of the highest standard and well above required levels; and extensive safeguards have also been taken to ensure a continued power supply for the lighting system.

Each station has two transformers and two power boards. If one board should fail, this will affect only every second light and escalator. There is no danger of an entire section of a station being plunged into darkness. Should a major failure cause all power to be cut off,





Section of platform at the new Kings Cross station.



Ventilating air for Martin Place station is drawn through ducts in the Domain behind the Sydney Hospital.

a further safeguard is provided in the form of an emergency battery system with sufficient power for five hours.

Closed-circuit television systems at Martin Place, Kings Cross, Edgecliff and Bondi Junction stations will assist staff in constantly monitoring platforms, automatic ticket barriers, arcades, galleries and concourses. This is an important safeguard and will enable staff to act promptly and correct any irregularities.

Television surveillance is also an effective deterrent against vandalism. A further safeguard against vandals is the special solution applied to wall surfaces to prevent damage by spray-paint slogan writers. This allows the sprayed-on message to be removed swiftly by a reagent compound.

Automatic ticketing was determined at the latest possible date so

that the most modern automatic ticketing system could be installed.

The end result is a sophisticated system, using magnetically encoded tickets which passengers will purchase from coin-operated ticket vending machines or booking offices at the ESR stations or from conductors on Eastern Suburbs buses. Periodic tickets will also be available from booking offices.

The tickets will cover bus/rail, rail/bus or rail-only journeys and enable travellers to use automatic turnstile barriers at stations. The turnstile operates when the passenger inserts a ticket bearing an encoded strip into the barrier. The ticket is either "swallowed" by the machine or returned to the passenger, depending on the type and validity of the ticket.

Platform destination indicators on all ESR stations will be remotely controlled from the PTC's com-

puterised signalling complex now being installed, as will all points and signals on the new line.

* * *

When opened in early 1979, the new line will introduce a new concept in commuter travel. It will result in:

- ★ A rapid-transit rail service which will move large numbers of passengers into and out of the city in the quickest possible time

- ★ A reduction of road traffic on the arteries leading into and within the city proper, as many buses will terminate at the two interchange stations.

- ★ A further reduction in road traffic when motorists recognise the speed and comfort of rail travel and switch to trains.

- ★ A reduction in pollution of the atmosphere because of fewer vehicles using the roads, and a conservation of fuel resources.

- ★ Improvement to the present Eastern Suburbs bus system which will become a modern co-ordinated intermodal operation.

- ★ Major relief to the congested City Circle rail system when ESR trains integrate with Illawarra Line services.

- ★ Reduced bus operating costs.

The Eastern Suburbs Railway will be the first new passenger-carrying line opened in New South Wales for forty years. At a time when many overseas railways are phasing out their passenger operations, the huge capital investment in this new line highlights the determination of the NSW Government and the PTC to improve the State's public transport services.

New trains, new buses, new ferries, and modernisation of facilities generally are all part of the Public Transport Commission's \$1,000 million five-year upgrading programme. Public transport is certainly getting better in New South Wales.



Melbourne's Loop —

a wider choice of City destinations

by A. G. GIBBS (Chairman, Victorian Railways Board)

(by courtesy, *Railway Gazette International*)

Melbourne's underground loop is not a metro or rapid transit system, capable of being operated as an entity in its own right. It is a city centre terminal and distribution system designed to overcome the disadvantages of existing terminal arrangements for the suburban network, in particular by avoiding concentration of all suburban traffic on the two city stations — Flinders Street/Princes Bridge, and Spencer Street — which at present handle about 90 per cent of it.

A second major operating problem with the existing facilities results from the imbalance of traffic generated by lines to the east compared with those to the west and north, accentuated by the fact that the principal train stabling area is to the east of Flinders Street, the side which generates most of the traffic.

Consequently, although all Flinders Street platforms are designed for through working, there are many terminate-and-reverse movements from the east which severely limit the station's capacity, and affect the whole suburban network at peak periods.

The underground loop is designed to provide terminal facilities matching the increased capacity of the suburban network as a whole, and to improve central area distribution at the same time.

By reducing the number of reverse movements at Flinders Street to the absolute minimum, it will enable a much higher number of trains to pass through the station, and eliminate the irritating delays inseparable from the present system of working.

Suburban passengers will also gain access to three new stations — Parliament, Museum and Flagstaff — thus bringing the whole of the central business area within easy walking distance of a station, to which trains will run directly from practically the whole suburban network.

To minimise travel time for commuters using underground stations in both morning and evening peaks, trains will run directly on to the loops in the morning and depart directly from the loops in the afternoon. That is, trains from the eastern suburbs will run around the

loop anti-clockwise in the morning peak, and clockwise in the evening; the opposite will apply to trains from the north and west. Reversible signalling will be installed on each of the single-track loops.

As the main shopping area of the city is closer to Museum station than to Flinders Street, it is proposed to continue the inward morning movements on the loop until approximately 11.00 am, by which time most shoppers will have reached the city. As reversing the direction of flow around each loop will necessarily break the continuity of services, this manoeuvre will be carried out progressively over a 45 minute period. All loops will then maintain the afternoon (or outward) direction of movement until services cease at midnight.

Inbound trains from the east, not required to continue in service after the morning peak, will traverse the loop and run directly into the Jolimont sidings after a final call at Flinders Street. In the afternoon, when rejoining service, they will make an initial call at Flinders Street and then proceed around the loop.

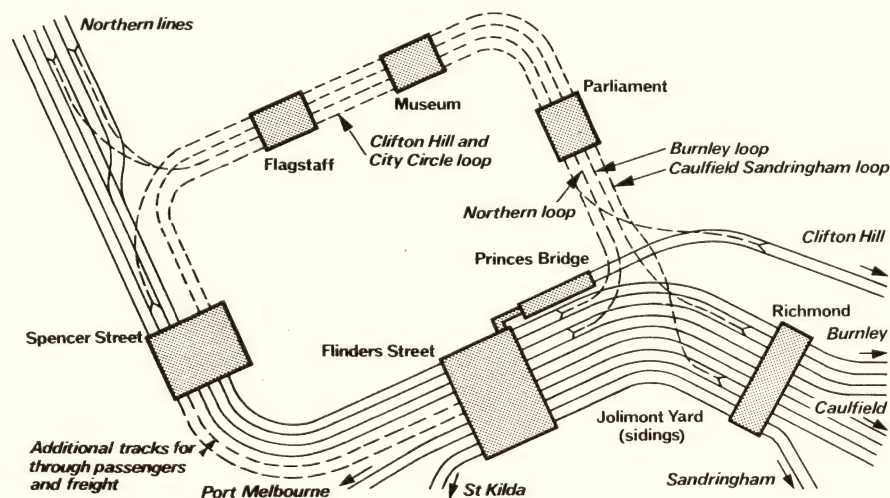


As well as linking most suburban stations direct to any of the five city stations, the design of the underground allows the Clifton Hill loop to be operated as a closed circuit on which a city circle service will operate between all city stations. Passengers wishing to travel locally in the opposite direction to the city circle flow must use the northern lines loop.

On Sundays, when central business area traffic is extremely light, loop services will be maintained on the city circle tracks only. All other trains will terminate at Flinders Street, as at present.

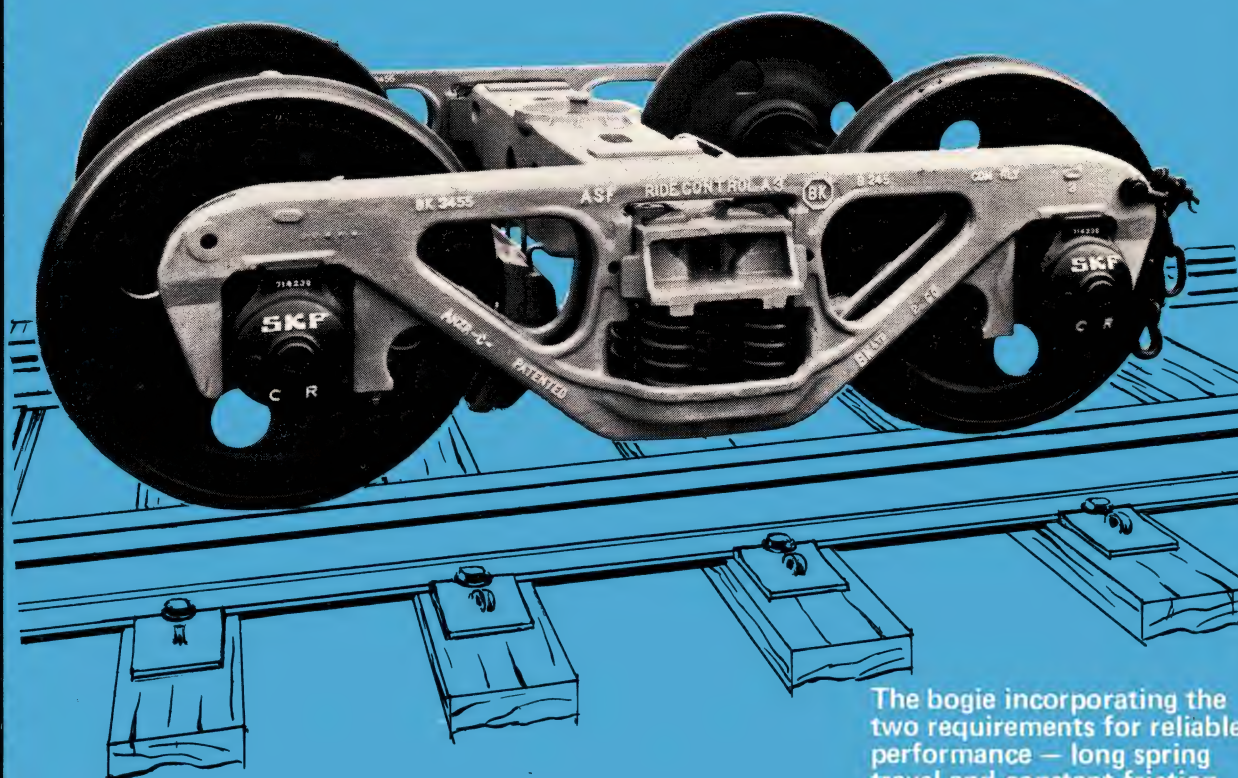
From the operating viewpoint, there will actually be four independent single-track loops, partly underground and partly surface. Each loop is linked to one of the four major groups of lines comprising the suburban network — Burnley, Caulfield, Clifton Hill and Northern.

Much of the infrastructure for the loop system is new construction underground, but between Flinders Street and Spencer Street stations —



ASF *Ride Control*®

The Proven
Economic and
Efficient Railway
Freight Car Bogie



BK677x

The bogie incorporating the two requirements for reliable performance — long spring travel and constant friction control.

The ASF Ride Control Bogie pioneered the use of long travel springs with adequate reserve spring travel—the travel of the spring between the loaded car height and the solid height.

Proper and constant control of spring action is maintained through a built-in design known as the *ASF Ride Control* snubbing system.

Manufactured in Australia under licence to Amsted Industries, U.S.A. by:

**BK BRADFORD KENDALL
FOUNDRIES PTY LIMITED**

A Member of the Bradken Group of Companies

Head Office: 22 O'Riordan Street, Alexandria, N.S.W. 2015
Telephone: 699 3000

● Sydney, N.S.W. ● Wodonga, Victoria ● Kilburn, South Australia
● Fremantle, Western Australia ● Runcorn, Queensland



Looking south from Collins Place building, the entrance to the Burnley loop almost completed

where loop services will use to the full an existing four-track viaduct — an additional pair of elevated tracks is being constructed (see *Network* May issue) so as to maintain an independent link between the eastern and western portions of the VicRail network, for both passenger and freight traffic.

suburban trains. Public address will also be available to inform passengers of any deviation from normal running.

Melbourne's suburban lines comprise 339 route-km. Traffic amounts to some 1,600 million passenger-km annually, with an average journey of 16.3 km.

The underground loop represents one major element of an integrated programme to raise both the capacity and the efficiency of the Melbourne suburban network. It is the declared policy of the Victorian government to encourage greater use of public transport — particularly rail — for commuter movement to and from the central business district.

Other vital aspects of the overall programme include track doubling

of outer lines; tripling or quadrupling of busy inner sections; replacement of manual block by automatic power signalling; construction and reconstruction of stations; expansion of station car parks; elimination of level crossings; extension of electrification to outer suburban areas; and modernisation and expansion of the fleet of EMU and locomotive-hauled trains.

The overall programme is, in fact, the rail segment of the 1969 Melbourne Metropolitan Transportation Plan. The stated objective is to provide an effective alternative to the private car for daily travel to or from the central business area, and indications are that this will have been achieved by the target year, 1985. Work is proceeding steadily within limits set by funds made available.

Train movements on that part of the inner suburban network which will be affected by the loop are currently controlled by eight signal boxes. These will eventually be absorbed into a single metropolitan train control centre (Metrol) whose functions will progressively extend until it controls all signals and points throughout the suburban network.

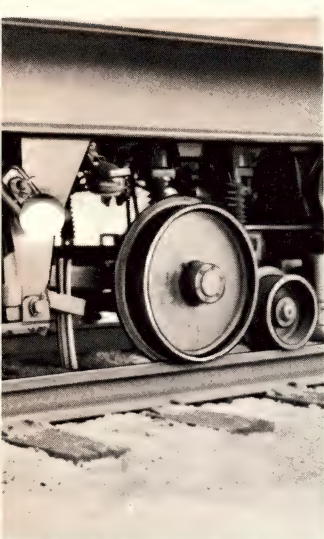
VicRail's board has also approved installation of radio communication between Metrol and all

EM 80 TRACK EVALUATION

High speed track evaluation under actual rolling stock axle loads.

Already chosen in Australia by:
Public Transport Commission of N.S.W.
Mount Newman Mining
Hamersley Iron.

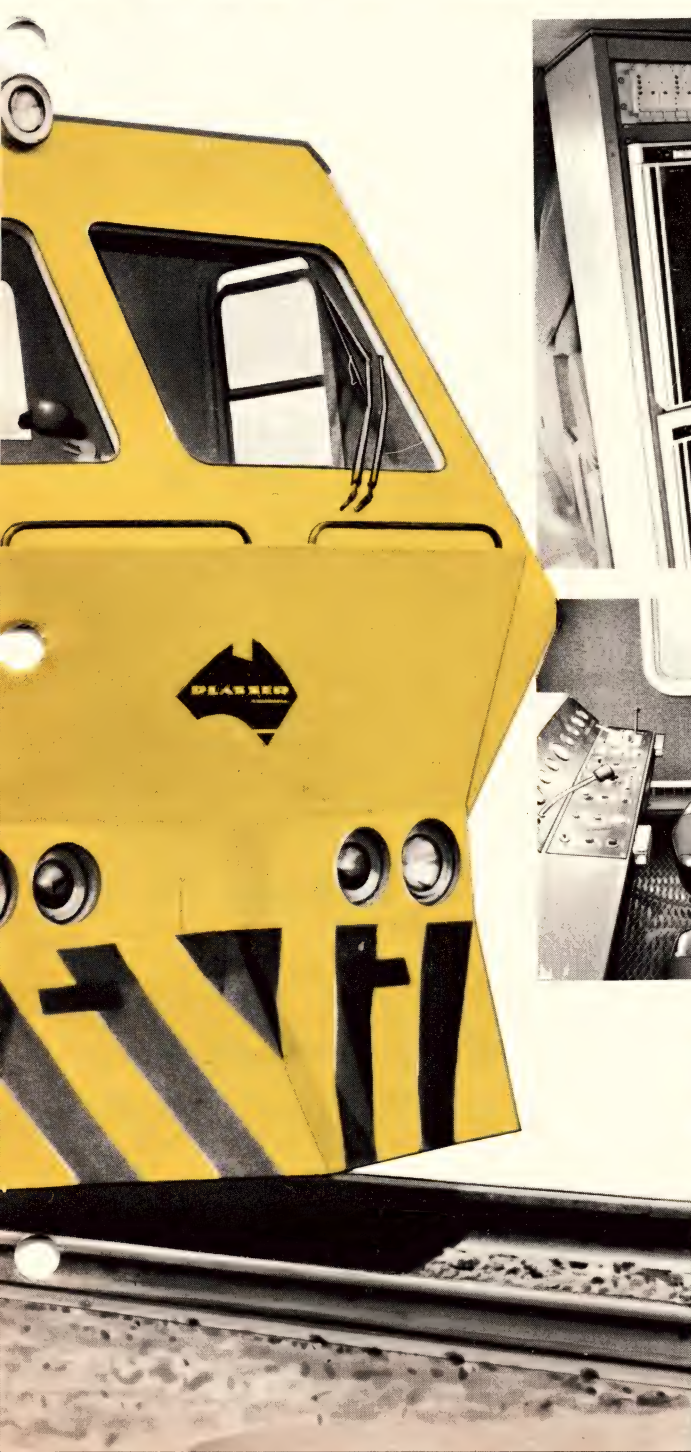




Coil spring suspension, hydraulic shock absorbers and fail-safe shoe brake system for comfortable and high speed travel. Axle loads of up to 18 tonnes and recording speeds of up to 110 km/hr. available. Telescopic measuring axles with large diameter wheels allow full speed recording of all parameters through switches and crossings. Electronic strain gauge measuring system is completely unaffected by environmental or temperature conditions. The EM 80 is currently operating in conditions varying from hot desert to cold mountainous country, with temperatures ranging from +50°C to -23°C.

Central console for control of recording and analysing functions. Measurement results for: alignment (l.h. and r.h. rails), longitudinal level (l.h. and r.h. rails), gauge, twist, superelevation, and recording speed are traced on one (or optionally two) 10 channel analogue recorders. Real-time exception reports for all parameters are tabulated by 30 characters per second silent teleprinter. A summary listing the total length of track exceeding the allowable tolerances for each parameter is also produced at the end of each kilometer.

ION CAR



Freely programmable analysing system uses well-known D.E.C. PDP-8A mini computer. The complete analysing process is software controlled and can be altered at any time to suit changing circumstances. With this system, it is possible for the operator to make small programme changes by keying in simple commands via the teletype.

All recorded data is stored on tape in digital form for further analysis. Phase encoded 9-track 1,600 bits per inch format is "IBM compatible", and compatible with most major computer playback facilities.



High quality seating for operator and observer, fingertip driving controls and excellent visibility provide optimum comfort and safety for crew. Standard features include: Intercommunication system between front and rear operators' positions and central recording console; separate totally enclosed engine compartment; fully air-conditioned (reverse cycle) car interior; tinted safety glass and blinds for all windows, fully carpeted internal lining, toilet and kitchen facilities.

PLASSER AUSTRALIA PTY.LTD.

76 Mandoon Road, Girraween
P.O. Box 84, Toongabbie
N.S.W. 2146



Phone: 631-1811, 631-6111
Telex: AA24140
Cables: Plassrail Sydney



Speed, Security, Strength.



Express freighting over the mountains, unit train service or passenger car 'hook-ups', Comsteel's automatic couplers and draftgears give the sustained service efficient railway systems demand to maintain strict timetables.

A range of both products, manufactured under licence to the National Castings Division, Midland-Ross Corporation of U.S.A., are available. In all cases the design and construction is related directly to the ultimate use and meets the requirements of the relevant AAR and ANZR specifications.

Whether it be operating speed or ease of coupling, strong construction or reliability of service, Comsteel couplers and draftgears are built to take the loads associated with modern rail transportation.

For detailed information contact:

Commonwealth Steel Company Limited

Mill and Engineering Products Division, Railway Parade, Lidcombe, N.S.W. 2141. Telephone (02) 649 0251 Telex: AA 24107. Or Maud Street, Waratah, N.S.W. 2298. Telephone: (049) 68 0411 Telex: AA 28115.

CRP/4/7789





The Finnish State Railways

Railways make up the vital backbone of surface transport in Finland. The Finnish State Railways handle about one quarter of the entire freight market and a clear majority of freight shipments over distances greater than 100 kilometres. In 1977 the total amount of freight conveyed by rail amounted to 21.4 million tonnes.

The Finnish State Railways are concentrating on handling heavy freight shipments and sufficiently strong flows of traffic; today, operations are being developed accordingly. The most important part of the railway network is being upgraded and electrified; and this is

Containers en route to Vainikkala, bound for Japan by the Trans-Siberian route.

perhaps one of the biggest investments by the entire traffic sector in Finland this decade.

Effects of the world-wide economic recession have now been visible in Finland for three years. The continuing depression of the Finnish economy has also affected the railway business. The consistent growth of freight traffic in the early 1970s turned to a steep downward trend in 1975. There was a slight increase in traffic in 1976, but this upswing was followed by a new downward trend the following year. Even passenger traffic began to show signs of decreasing in 1977, for the first time this decade.

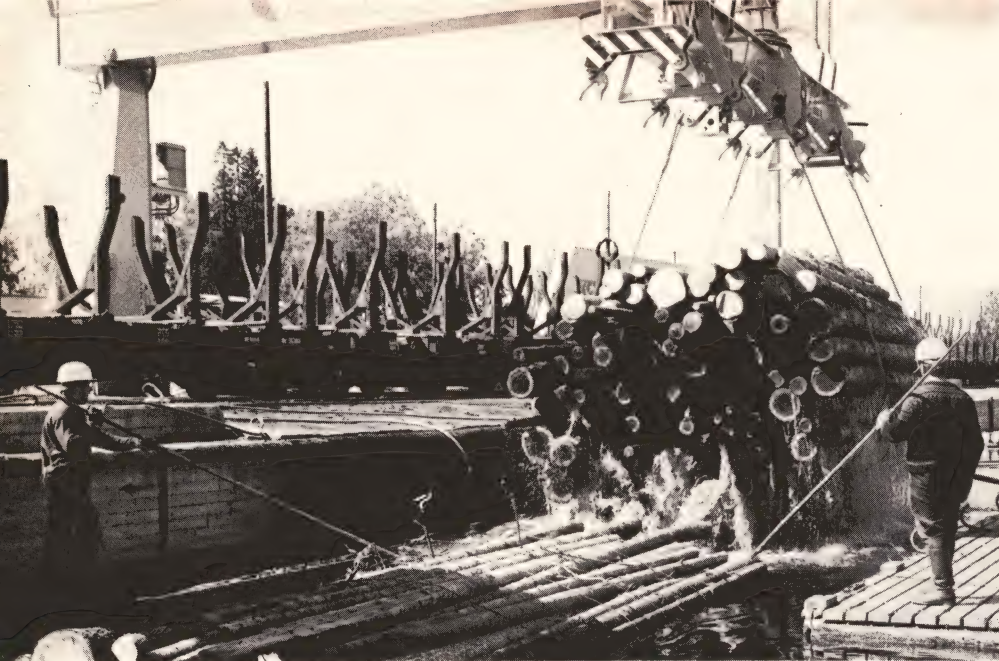
Under these adverse circumstances, the railway has been forced to concentrate a great deal of its marketing effort on retaining the railway share of the traffic market.

Multi-purpose, Russian-built electric locomotive — Maximum speed, 140 km/hr.

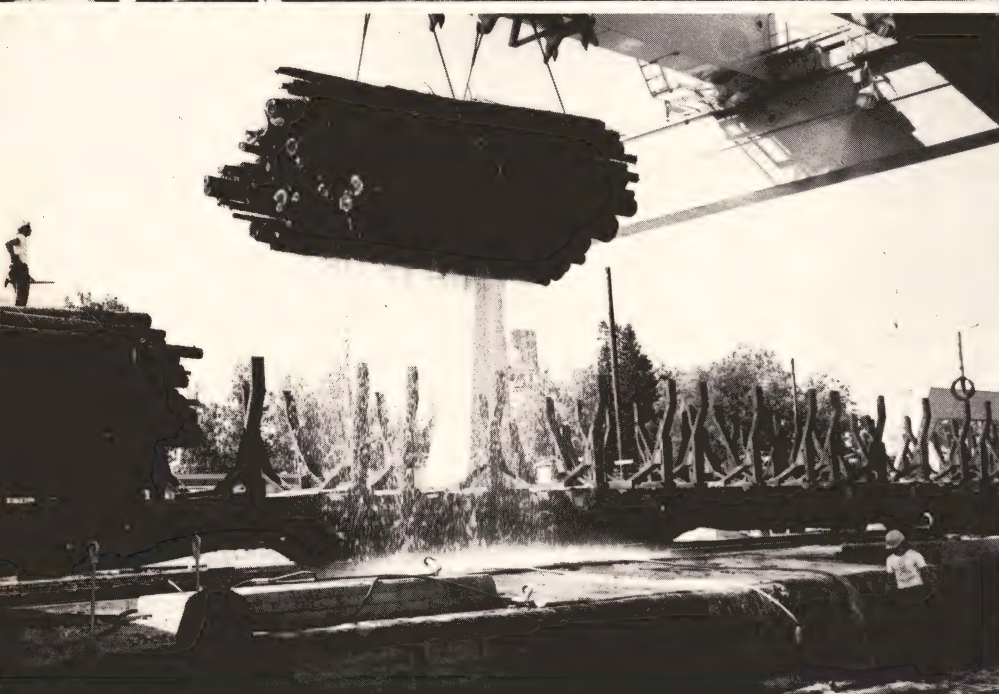
It is encouraging to note that this share of the total market has not gone down, even though competition for the diminishing volume of traffic has increased. As a matter of fact, the railway has in past months been able to improve its position slightly, for instance, in the transport of timber and chemical industry products. A lot of work has also gone into attracting new part-load traffic.

The Finnish State Railways' international traffic has grown considerably. Railways provide the main arteries of transport between Finland and the Soviet Union, and east-bound traffic through Vainikkala accounts for almost one





Floated timber is loaded on railway wagons to be conveyed to paper mills, a combination of water and rail transport known in Finland as "iron canal" or "rail-canal".



quarter of the entire transport performance of the Finnish State Railways. An efficient transportation route westwards is provided by the Finnish/German rail-ferry connection between Hanko and Travemünde. Thanks to Finland's geographical position, the railway has been able to acquire a large amount of transit traffic.

In recent years the Finnish State Railways have been able to improve their carrying capacity by establishing close co-operation with forwarding agents and other surface-transport operators. The railway is also a shareholder in the company East-West Service, which specialises in international forwarding services. In the field of road transport, the railway works in very close co-operation with its subsidiary, Oy Pohjolan Liikenne Ab.

The early years of the 1970s saw the railway make a second coming in Finland. Reports of transport problems and traffic congestions encountered in densely populated Central Europe made local authorities and politicians in Finland realise that continuous construction of motorways would not be a solution in the long run. Moreover, the oil crises and resulting changes in energy prices contributed towards reviving general interest in public transport.

A Parliamentary Traffic Committee was therefore set up to undertake a study of the future demand for and provision of transport. The committee recommended that each mode of transport should handle the traffic for which it is best suited. According to this, the railway is to provide the main arteries of surface transport, handling heavy freight carryings and strong flows of commuter traffic and providing long-distance passenger services.

To meet this challenge, the railway must continue planning for the further modernisation and technical development of the entire system. A great deal of work to this end has been done throughout this decade, investments being about 700 million marks annually.



Below: Container-handling crane at the Vainikkala frontier station.

This sum has enabled the railway to continue track renewals, to electrify main lines, to build 1000 new freight wagons a year, to continue conversion from diesel power to electric traction, to improve signalling and traffic control equipment, and to build new cut-off routes and industrial lines.

These measures, together with extensive staff training, have substantially improved the performance capacity of the Finnish State Railways, which will now be far better prepared than ever before to take full advantage of the next upswing in the Finnish economy.

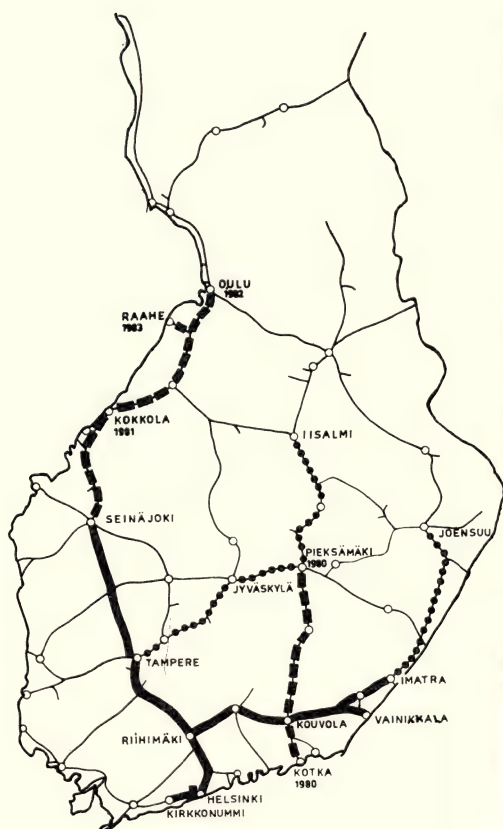


Track-laying and track equipment.



A new cut-off line, opened in May 1978, which shortens quite considerably transport times between Helsinki and central Finland.



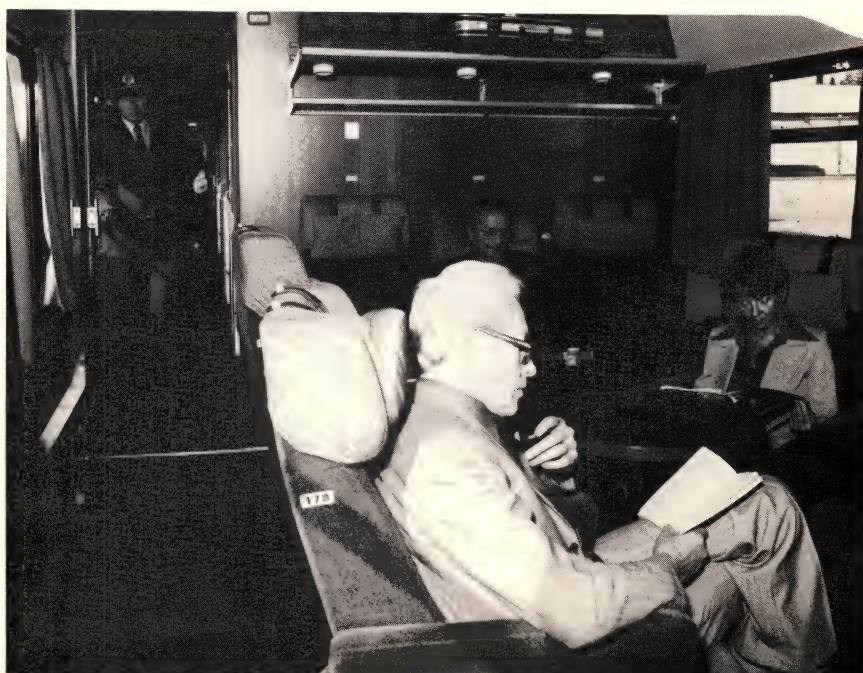


- electrified
- - - electrification in process
- to be electrified

The smokers' lounge of a first-class special express train. It seats ten passengers. The rest of the coach comprises seven compartments, each sitting six passengers.



*Top: A control panel in Helsinki.
Centre: Dining cars are divided into a dining saloon and a self-service section. The former seats 24; the latter has 18 bar stools and standing room.*





Privately Owned Freight Wagons on the Queensland Railways

Queensland Railfast Express Pty Ltd have taken delivery of the first of a total order of 50 new rail wagons for use in their transport system. The contract, valued in excess of two million dollars, is due for completion in November 1978.

The first three wagons to be completed were handed over to Mr Bryan Jackson, Managing Director of QRX, by the Deputy General Manager of Commonwealth Engineering (Qld) Pty Ltd, Mr Maurice Clarke, at their Evans Road, Salisbury plant.

Mr Jackson said that his company had decided to invest in rolling stock after seven years' experience with conventional Railway Department wagons. He paid tribute to the quality of the existing Queensland Railways rolling stock and in particular to the QLX class louvred vans, most commonly used by his company and in use with the Railways Department for the past 15 years.

"It is a credit to all concerned in the design and construction of the original QLX wagons," he added, "that their basic design remains

unaltered in our new CLO wagons.

"We went for increased cubic capacity and incorporated several new features, the most important being double sliding doors, which facilitate ease of handling of palletised and unit cargo. The new CLO wagon has a cubic capacity over 40% greater than the older QLX wagon. It is significant that these improvements were suggested by our operations staff as a result of their experience with conventional equipment."

Mr Jackson continued, "The decision to build our own rolling stock is based upon a conviction that the railway system offers the best long-term freight medium for the State of Queensland, when factors of time, distance, reliability, economy and safety are taken into account."

He then formally handed the new wagons over to the Hon. K. B. Tomkins, MLA, Minister for Transport, for use upon the Queensland Railways.

* * *

The Transport Minister paid tribute to the Queensland Railfast Express

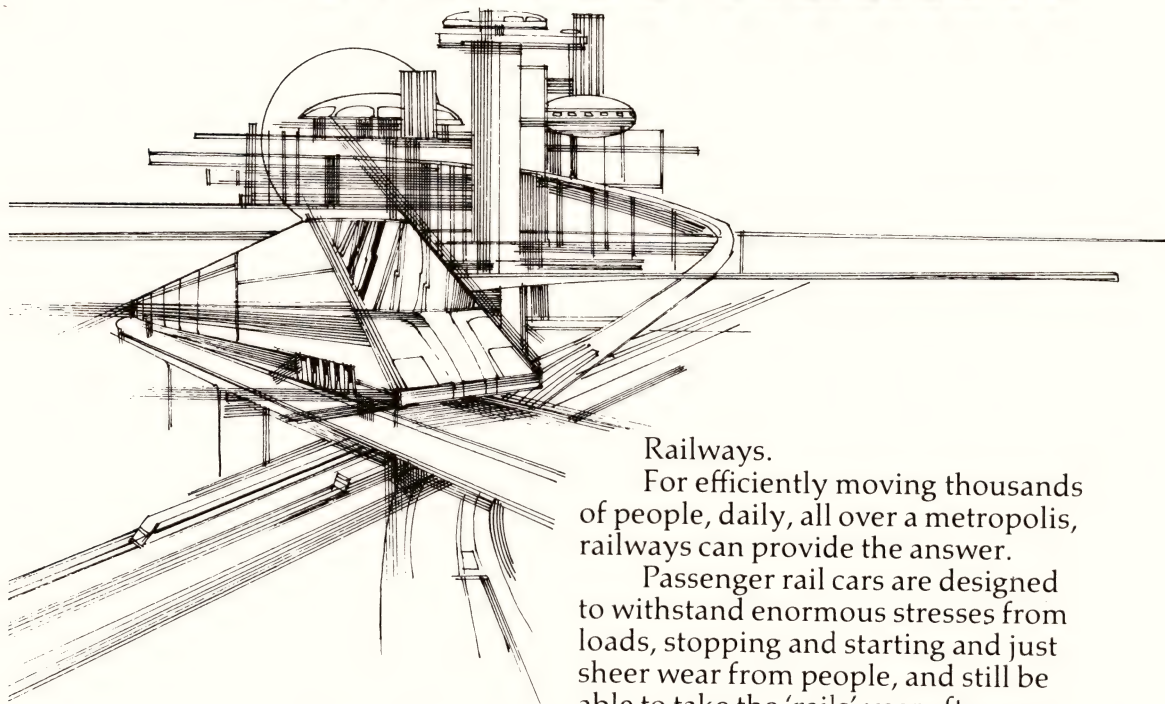
Mr Brian G. Jackson (Managing Director, QRX), the Hon. K. B. Tomkins (Minister for Transport), Mr M. Clarke (Deputy General Manager, Commonwealth Engineering Pty Ltd) and Mr P. J. Goldstone (Commissioner for Railways) on the dais at the handing over. Executives and employees of QRX and Commonwealth Engineering are in the foreground.

company for what he termed "its confidence in and co-operation with the Queensland Railways." It was particularly pleasing to see QRX — a road-transport-orientated company — accepting the concept of the railways carrying out long hauls and road transport the short hauls. "This type of co-operation between private enterprise and a Government undertaking is very encouraging," he added.

The Minister said that the new wagons, the biggest to be built in Queensland, were the maximum size possible under the present gauge and traffic restriction limits. Designed to facilitate mechanised and palletised handling of goods, they would be a valuable addition to the railways' wagon fleet.

As purchasers of the new wagons, QRX will have exclusive use of them for ten years.

THE SHAPE OF MASS TRANSIT



Railways.

For efficiently moving thousands of people, daily, all over a metropolis, railways can provide the answer.

Passenger rail cars are designed to withstand enormous stresses from loads, stopping and starting and just sheer wear from people, and still be able to take the 'rails' year after year.

Comsteel Stainless Steel is an important contributing factor to the quiet efficiency of the urban and interstate railway systems.

Strong, fireproof, impact damage resistant and with all the other advantages offered by this remarkably "young" material, Comsteel stainless is the carriage construction material of now and the future.

Rail cars are just one of the uses; newly developed stainless coal hopper rail wagons are also proving the point. Apart from railways, there are buses, moving walkways, escalators and elevators, all extensive users of Comsteel Stainless. In fact Stainless Steel will suit any applications where other materials struggle to survive.

Comsteel Stainless Steel and technicians are at your service—call us, we would like to help you shape your future.

Sydney (02) 667.2361; Melbourne (03) 68.3301; Adelaide (08) 45.5357; Brisbane (07) 44.2814; Perth (09) 325.3777.

Shaping up best
for the future.



Commonwealth Steel Company Limited, Stainless Flat Product Division,
Five Islands Road, Unanderra, N.S.W. 2256. Telephone: (042) 71-1888. Telex: AA 29004.

CSS/38/7709

The former convent school for the Sisters of Notre Dame des Missions in Fortune Street, Narrogin, is being modernised to house Westrail's local district offices. Remodelling has been centred mainly on the interior of the building; externally, except for a minor face-lift, the structure is to retain its original style and character.

The public reception area will be refurbished with random-grooved jarrah wall-panelling and wall-to-wall carpet tiles. The ground floor will also house the District Traffic Superintendent, the Train Controller, the District Electrical Supervisor and the Commercial Representative. The first floor is being converted to accommodate the District Engineer.

The new offices will be completely air-conditioned with ducting concealed above suspended ceilings.

The existing annexe has been designed to accommodate a kitchen and staff amenities and the veranda enclosure will be used as an air-conditioning plant room and workshop. The adjacent cottage is to be demolished to provide parking for customers and staff. However, the area is to be landscaped and brick paving constructed to Fortune Street to blend with the main building.

In gardens at the southern aspect of the building, existing fruit trees are to be retained and new shrubs, indigenous to the district, planted as part of an overall landscaping project.

The project is expected to be complete by the end of the year.

* * *
Mr L. Pitsikas, Chief Mechanical Engineer (left), Mr W. Gallop, Foreman, and Mr R. A. Wadham, Assistant Chief Mechanical Engineer (Works), of Westrail, inspecting the first of eight wagons designed and built at Westrail's Midland workshops for the haulage of alumina from Alcoa's Pinjarra refinery to the port facilities at Bunbury and Kwinana.

The wagons, constructed of aluminium, have a load capacity of 63 tonnes and are equipped with bottom discharge doors for rapid unloading.

* * *
The first consignment of beer leaves the new premises of Swan Brewery at Canning Vale, W.A. Westrail will operate direct from the siding Forresterfield marshalling yard where wagons will be sorted into their various country destinations.





The \$2 million microwave link to improve communications between Broadmeadow and Grafton on the PTC's North Coast Line (see *Network*, March 1978, p.25) was officially commissioned on the weekend of 15/16 July. This equipment will also be a vital part of the North Coast Centralised Traffic Control system for which tenders closed on 9 August.

This is the PTC's third microwave link, the other microwave links being between Sydney and Orange, and Sydney and Goulburn.

Another microwave system is being provided between Newcastle and Werris Creek, and plans are being developed for another linking Sydney and Newcastle.

The photo shows the new enlarged microwave disk aerial recently installed on the Sydney Station Tower, facing south, to provide for the extension to Goulburn. This aerial is 2.4 metres (8 ft.) in diameter.



Since July 24, two-way radios have been issued to PTC staff on morning and evening commuter and some other trains to enable them to keep

passengers better informed of any irregularity in train running.

Seventy portable radio units and associated equipment, valued at about \$100,000, have been purchased as part of a programme of improving communications.

The two-way radios provide direct contact between drivers and guards. In addition four signal boxes in each area are supplied with similar equipment, providing a direct link with train staff, subject to performance limitations when trains are in mountainous country.

In difficult terrain where a driver cannot make radio contact with the signal box, he can obtain information by using the trackside signal telephone and inform the guard by two-way radio. The guard can then relay the details on the train's public address system (if so equipped) or by walking through the carriages.



The PTC has recently installed telephones at a number of Blue Mountains stations to enable passengers to obtain information quickly regarding train running or any other details desired when such stations are unattended.

Telephones at Lapstone and Warrimoo are connected to the Station Master's office at Springwood, and those at Faulconbridge, Linden, Woodford, Bullaburra, Hazelbrook and Medlow Bath are in contact with Katoomba. On the Northern Line, telephones at Koolewong, Point Clare and Tascott are connected to Gosford.

To obtain information, passengers merely have to depress the "Ring" button for three seconds, release, and listen for staff to answer; they then give the name of the station from which they are calling, and request the information desired.

The Commission is anxious to keep passengers fully informed of any irregularities or the duration of delays, and provision of this equipment will assist its staff in carrying out this task more efficiently.

* * *

About \$1.5 million will be spent by the Public Transport Commission of NSW during the next three years in providing more parking spaces at railway stations as an extension of its "Park and Ride" scheme.

At present about 4,500 spaces are available at stations and are used to capacity, enabling commuters to park in the suburbs and travel to their destinations by train.

Of these, 1,289 spaces have been made available since May 1976, at a cost of about \$450,000. A further 2,400 spaces are planned for construction by the end of 1979/1980, of which 422 should be available over the next few months.

The PTC is also negotiating with the Department of Main Roads and Woollahra Council to provide 350 spaces near Bondi Junction, terminus for the new Eastern Suburbs Railway.

Whilst the programme is mainly designed to service the Sydney Metropolitan Area, 96 spaces are planned for Wollongong, 26 for Morisset, 35 more at Gosford, and 56 at Koolewong, all in "inter-urban" areas.

* * *



Fifty more double-deck carriages have been ordered by the Public Transport Commission of NSW for its suburban services from Commonwealth Engineering (NSW) Pty Ltd at a cost of \$14 million. Half of the new order will be motorised

carriages, the balance trailer cars.

Delivery of these extra carriages will follow completion by Comeng of a current contract for 150, most of which have now been delivered. Under another contract, Goninan & Co is building a further 150 double-

deck suburban carriages at Newcastle.

When these contracts are completed, double-deck carriages will make up about half of all Sydney's suburban electric trains.



Beautiful sarong-clad Gold Coast Visitors' Bureau hostesses, guests wearing leis, and romantic Polynesian music set the theme for a very successful joint promotion arranged by the Public Transport Commis-

sion of NSW and Cobb & Co at Sydney Station recently.

The functions were staged to "launch" the PTC's latest 56-page full-colour *STAYAWAY Holiday Guide* and to promote with Cobb &

Co the new co-ordinated Rail/Coach service between Sydney and Queensland's Sunshine and Gold Coasts.

Under this new scheme, rail travel is provided in the comfort of air-conditioned "Day-Niter" carriages on "Brisbane Limited" between Sydney and Casino, with air-conditioned Cobb & Co coaches providing the road link with Queensland's famous tourist resorts. "Dollar Saver" package tours embracing the best accommodation in these areas are also a feature of the new co-ordinated service.

The famous resorts of Coolangatta and Surfers Paradise on the Gold Coast, and the Sunshine Coast's Noosa, Maroochydore, Buderim, Alexandra Headland and Caloundra conjure up visions of the perfect holiday. And after the joint promotion, travel agents and other guests were convinced that there is no better way of getting there than by the co-ordinated rail/road service, which has as its theme . . . ENJOY BEING RAILROADED!

The “John Whitton Bridge”, Meadowbank

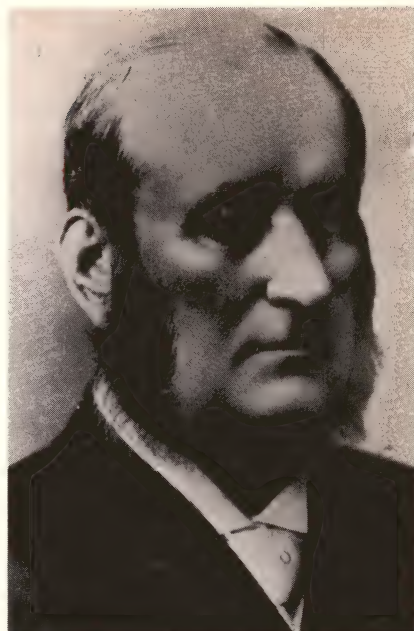
The PTC's new \$7 million railway bridge over the Parramatta River at Meadowbank is to be called the “John Whitton Bridge”. It will perpetuate the memory of John Whitton who has been called “The Father of the New South Wales Railways” and who held the position of Engineer-in-Chief for a period of 32 years (1857-1889).

Prior to his appointment, John Whitton had many years experience in England and such was his reputation that when the N.S.W. government sent home for the best man that could be had, Mr Whitton was recommended. At that time he was the Engineer of the Oxford, Worcester and Wolverhampton Railway.

During his term of office in N.S.W. he was responsible for the construction of over 3,200 km (2000 miles) of line, thereby laying the foundation for the present network.

One of the projects he supervised was the building of the “Great Zig Zag” between 1866 and 1869. This was regarded, at the time of construction and for many years after, as one of the wonders of the world. Its fame became world-wide and many visitors came from overseas to view it.

When the “John Whitton Bridge” reaches a more advanced stage, a suitable plaque will be affixed in an appropriate position.



John Whitton



The new Meadowbank Bridge under construction





Goulburn Wagon Repair Workshop

New Wagon Repair Workshops

The NSW Premier, the Hon. Neville Wran, recently confirmed plans to establish four main workshops dedicated to the scheduled preventative maintenance of the PTC freight wagon fleet. They will be located at Goulburn, Bathurst, Newcastle and Sydney.

Designs and documentation for the new Goulburn workshop will be completed in October, allowing for construction to be commenced on the \$7 million project early in 1979. The new 120 m x 44 m workshop is expected to be fully operational by mid-1980.

The Goulburn workshop will employ the staff from the Per Way Workshop and Locomotive Depot and will be supplemented by a small number of wagon builders to ensure a balanced workforce to man eight wagon-repair locations.

The workshop, which will carry out scheduled maintenance on eight wagons at a time on two through roads, will be supported by its own store, a small fitting/machine shop, a blacksmith shop, a wood mill, a fabricating area for boilermakers, a general area for other skills and a two-level amenities area for all staff.

An administration office will also be constructed. The entire area will be heated for comfort in winter months, and a car park will be provided for employees and visitors.

Locomotive maintenance activities at the locomotive depot will remain as at present.

Tenders have also been called for construction of the new wagon repair workshop at Bathurst. Total area of this building will be about 7,100 square metres, with associated external concrete-paved roadways and parking areas of about 11,000 square metres.

In addition to the actual workshop building, tenders have also been called for the provision of

space heating, ventilation and air-conditioning to the appropriate areas, together with the necessary switchboards and various types of cranes.

In addition to wagon repairs provision is being made at Bathurst for the overhauling of two locomotives at a time, to provide continuation of work for tradesmen currently engaged on such operations.

It is expected that the Bathurst complex will cost about the same as the Goulburn workshop.

Reading a **BORROWED** "Network"?

If you're interested in the latest authentic news concerning the Railways of Australia, may we suggest you become a subscriber?

For only \$7.50 each year we will post a regular copy of *Network* to your home address. Just send your cheque!

The Circulation Manager,
Railways of Australia,
4th Floor, 325 Collins Street,
Melbourne, Victoria 3000

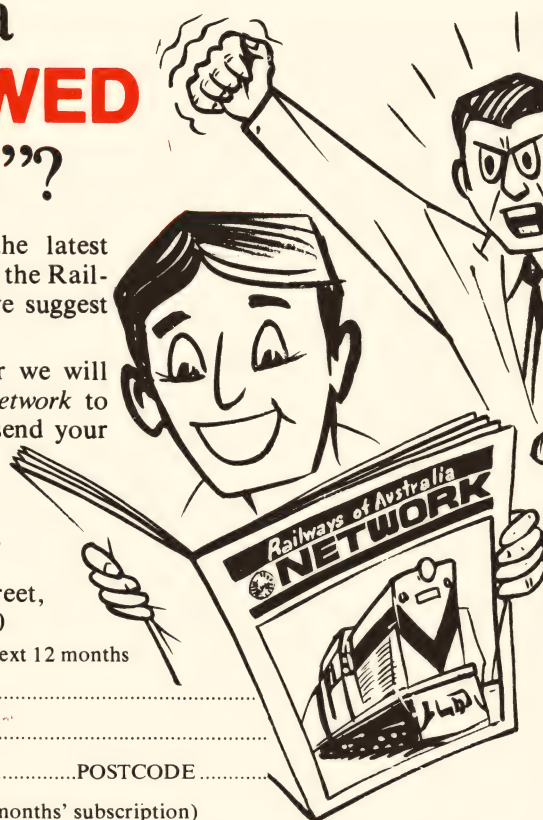
Please send me *Network* for the next 12 months

NAME

ADDRESS

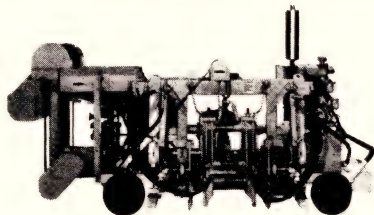
.....STATE.....POSTCODE.....

(Enclosed \$7.50 for 12 months' subscription)

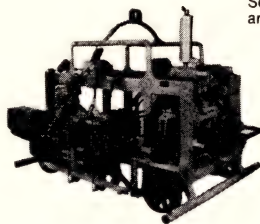


A DOZEN (and one) WAYS to IMPROVE your M/W PROGRAM

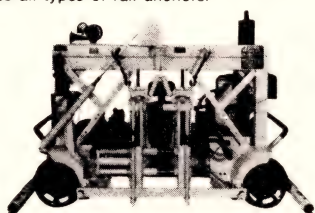
ANCHOR-MATIC Pre-sets and applies anchors in a single operation.



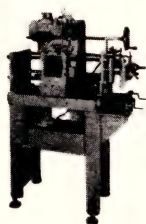
DUO-ANCHOR-FAST Semi-automatically applies anchors with dual heads.



ANCHOR-FAST Quickly and accurately applies all types of rail anchors.



MULTI-BORE Stationary three spindle multiple drill unit with automatic feed, drills 2 or 3 holes up to 1 1/2" at once in rail ends off track.



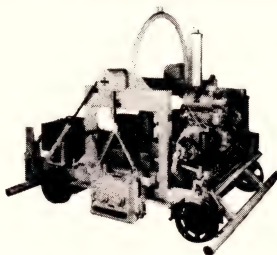
RAIL DRILL Is fast, easy to handle. Clamps to rail. Manual or automatic feed.



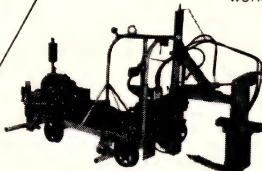
TRAK-SKAN Solid state gauge and cross level recorder has digital readout plus permanent recording.



TRAK-VIBE Vibrates rail into natural position before anchoring.



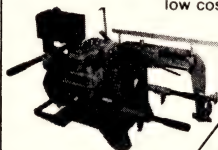
BALLAST-CRIBBER Removes all sizes and types of ballast from under rail in-track for maintenance work.



TRAK-KUT Fast, light-weight abrasive saw clamps to rail; swings over to cut from both sides.

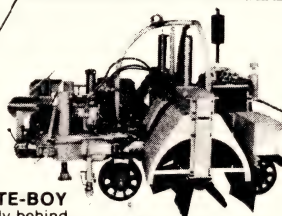


RAIL SAW Cuts smoothly and accurately in-track at low cost.

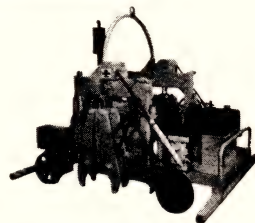


PLUS A FULL SECTION OF HYDRAULIC TOOLS

PLATE-BOY Used directly behind the inserter, this combination machine cleans tie ballast and inserts tie plates.



DUO-ANCHOR-TIGHT Tightens anchors on both rails at same time.



THE NEW ONE! TIE-SAVER

A dry compound of a petroleum byproduct, wood preservative and other chemicals adds 5 to 8 years to spike-killed ties.



racine

DISTRIBUTED IN AUSTRALIA BY

GRANITE CONQUIP

MACHINERY PTY. LTD.

1 Wetherill St., Lidcombe
N.S.W. 2141
Telephone 647 1056
Telex AA 23352

The Window Seat

The August issue of *Railway Gazette International* is sub-titled "Focus on Australia". In "The Story Behind the Deficits," Mr John Dodgson, recently a visiting lecturer at the University of Wollongong, analyses the accounts of the various Australian systems since 1965. A. T. Griffith, Director of Operations, Public Transport Commission of New South Wales, outlines the system's key role in expanding coal exports; and there is a review of the current electrification programme on the Brisbane suburban network.

Mr R. J. Pascoe, of Westrail, outlines the Railways of Australia Vehicle/Track Studies programme; and Mr A. G. Gibbs, of VicRail, sets out the purpose and plan of the Melbourne underground railway loop (abridged in this issue by courtesy of *Railways Gazette International*).

The occasion for this special Australian issue is the Heavy Haul Railways Conference, scheduled to meet in Perth, 18-22 September. The 59 papers are listed in full under subject headings.

On 26 July, Australian National Railways successfully completed a test run of the biggest-ever ore train to run between Broken Hill and Port Pirie.

The normal Broken Hill-Port Pirie ore trains are 56 wagons in length with a gross load of 4281 tonnes. The record-breaking gross load was 5269 tonnes, conveying lead and zinc concentrates, hauled in a 69-wagon train.

The test run also produced the fastest time by an ore train over the 397 kilometres, reducing the normal schedule by 72 minutes.

The record-breaking train was hauled by two of the most powerful locomotives in the Australian National Railways fleet — 3300 horsepower turbo-charged CL Class locomotives. These are normally used on ANR's Northern Region (the old Commonwealth Railways system) hauling fast freight trains on the Trans-Australian Railway.

ANR currently operate five ore trains per week from Broken Hill to Port Pirie, hauled by twin 600 Class or paired 600 and 700 Class locomotives. Further tests with locomotives of differing horsepower are planned.

When "Indian-Pacific" was introduced in 1970, with only twice-weekly services either way, trains were often fully booked for twelve months ahead. With the four services a week now operating, some accommodation is available in the off-peak periods, at which times two new concessions have been introduced.

The previous requirement for 20 persons to travel together to obtain the 10 per cent group concession has been reduced to 12, and travellers do not have to belong to the club or organisation. And any person organising a private group involving any combination of fares equal to the cost of twelve full adult fares will be granted free travel. In the case of first-class return travel between Sydney and Perth, the "gift" ticket would be worth \$473.

The off-peak periods of the year extend from 1 February to 15 August and from 1 November to 15 December.

A recent statement by the Hon. Neville Wran, QC MP, Premier of New South Wales, confirmed that the Public Transport Commission of New South Wales is to electrify the Gosford-Newcastle section of the busy Main Northern Line. Completion of this project will bring enormous benefits in efficiency, speed and economy.

During the coming financial year (1978/79) the amount of \$500,000 has been allocated, and a further \$5 million will be sought in the following year's Capital Works Programme for this project.

Following closely on the announcement of appointment of a Project Manager for the Sutherland/Waterfall electrification (see *Network*, July 1978) the PTC has approved of a Project Manager also being seconded for the big northern electrification project. The officer to fill this position has not yet been named.

The PTC of NSW is examining tenders for a further increase of 400 BDY open wagons to its extensive freight fleet. Since its establishment, in 1972, PTC has ordered more than 2500 new freight wagons at a cost of \$107 million, out of a total of \$334 million spent on its rail, bus and ferry fleets.

In addition to the big \$7 million Meadowbank Bridge, Public Transport Commission of New South Wales bridge builders are busy on many other projects, such as the North Coast line bridge replacement programme and the \$2 million Narrabri Creek bridge.

The NSW Government has allocated \$20 million to replace all the timber rail bridges on the North Coast line over the next seven years. This involves no less than 357 new structures to replace timber bridges between Maitland and Grafton, all of which were built about sixty years ago.

A big bridge across the Avon River at Gloucester and another at Warrell Creek near Macksville will be completed by the end of this year. Four other bridges on the Yumbunga-Bulliac section of the line just north of Gloucester and two bridges near Stroud Road will be replaced before mid-1979.

There will be little or no interference with rail services during this replacement programme. PTC engineers, tradesmen and private contractors have developed bridge-building techniques which enable the new piers to be built between existing timber piers and, with the aid of cranes, it is possible to place the new steel spans in position and relay the line within 12 hours.

The Victorian Government has promised a \$100,000 grant to the Geelong Steam Preservation Society's Bellarine Peninsula Railway project. It is on a \$2 to \$1 basis — the society must raise \$50,000. It has \$6000 in hand, and the Bellarine and Queenscliff councils will contribute \$34,000. When the remaining \$10,000 has been raised, the society will establish 16 km of narrow-gauge (3' 6") track on the closed VicRail railway reserve between Queenscliff and Drysdale.

Rolling stock owned by the society, including carriages and six locomotives, will be transferred from the Belmont Common Railway which the society has been operating since 1968.

It is also proposed to establish a steam museum at Drysdale. The society already has a steam roller, a traction engine, portable and stationary steam engines, steam ploughs and a threshing machine.

"Railways — Original and Model", is the name of a railway exhibition arranged by Swiss Federal Railways

(SBB) and the Swiss Industries Fair (MUBA) in Basle from 28 October to 12 November 1978.

This "Exhibition and Trade Fair for all railway fans" will — with the participation of the German Federal Railways (DB), the French National Railways (SNCF), many regional transport companies, the Swiss Transport Museum, and the Association of Railway Amateurs — show rolling stock from the early days of railways to the latest designs, together with models and layouts built by amateurs, as well as models and layouts in various gauges from toy manufacturers. The trade being represented, visitors will have the chance of studying the

whole range of model railways on offer and of buying there and then what they fancy.

Railway bands and choirs will offer entertainment, and the accompanying attractions include visits to railway installations in Switzerland and across the borders, steam-engine trips, tours of three countries, and a visit to the French Railway Museum in Mulhouse.

Reduced-rate travel is being arranged for visitors to the exhibition, and the Basle Tourist Office offers a special weekend arrangement with hotel accommodation.

Further information is available from the Swiss Industries Fair, CH-4021, Basle, Switzerland.



Britain's Advanced Passenger Train (APT) — a streamlined 250 kph electric train with a unique suspension system and employing technology as advanced as that in Concorde — was unveiled recently at the British Rail Technical Centre at

Derby in the English midlands.

Unlike conventional trains, the APT power cars are not at the front but in the centre of the train between the passenger coaches. At each end there is a driving cab with an auxiliary diesel engine that can



New Zealand Railways have received 13 tenders from overseas manufacturers for the design and supply of new suburban passenger rolling stock for Auckland and Wellington, the Minister of Railways, Mr McLachlan, announced recently.

"The tender period was extended for a month because of the interest shown," said Mr McLachlan, "and when tenders closed the number received, from many different countries, was unprecedented for a rolling stock contract for New Zealand Railways.

"It will take about three months to evaluate them and place an order but I am hopeful that the first of the new equipment will enter service in 1980. We will then have modern rolling stock equal to the best anywhere in the world."

power the train in the event of a failure of the electric current. The most advanced feature of the train is the suspension system that will tilt — "bank" as an aircraft does — up to nine degrees when taking curves at high speed whilst the passenger compartment remains upright. The coaches are built of aluminium using a method similar to that used in the building of aircraft. This reduces the weight by more than 40% yet retains the full strength. The trains are fully air-conditioned with automatic sliding doors.

Paying passengers will be carried on the train between London and Glasgow at the end of next year, by which time the journey time between the two cities will be cut to a little over four hours.

CP Rail crew replacing worn 100 lb rail with new 115 and 136 lb rail as part of a \$43 million building and reconstruction programme for Ontario, Canada. The steel crews, working six-day weeks and 12-hour shifts are spending the summer working on the 60-mile Lakehead stretch of track 120 miles east of Thunder Bay, Ontario. Parts of the replacement track will be quarter-mile lengths of continuous welded rail which the 100-man crew handle with specialised equipment. Replacing one side of the track at a time, the crew is often stretched out over a mile from "head" to "foot". The Lakehead rail replacement cost of almost \$9 million makes it the largest single project undertaken this year by CP Rail in the Province.

(cont. on page 6)

Ever seen a traffic jam on a railway line?

Australia's rail freight system often makes competitors green with envy.

For example, traffic jams don't bug us. That's Advantage No. 1.

And pot holes and bumps don't effect us at all . . . our smooth steel ribbons reduce the possibility of transit damage. Advantage No. 2.

Rail uses up to 75% less fuel and reduces environmental pollution.

A medium size freight train can haul the combined loads of dozens of road transports. The obvious economics will interest you.

For the dollar details, call your nearest rail freight expert. He's listed below:

Your railways freight specialists:

N.S.W.: Public Transport Commission of New South Wales: 290 4026

QLD.: Queensland Railways: 225 1218

S.A.: Australian National Railways: 267 4300

TAS.: Australian National Railways (Tas. Region): Hobart 38 9286

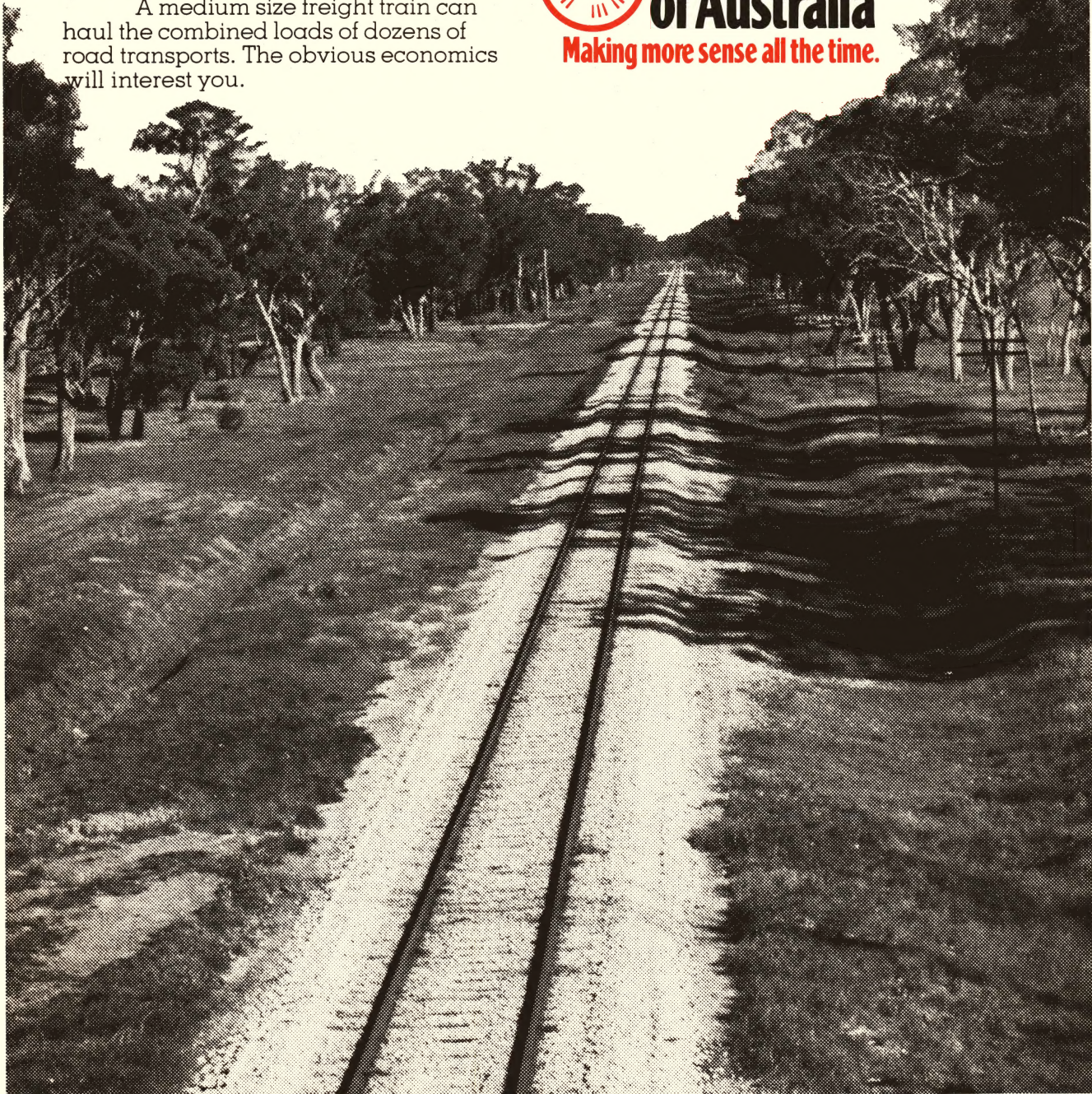
VIC.: VicRail: 62 0061

W.A.: Westrail: 326 2811



**Railways
of Australia**

Making more sense all the time.



***"A new breed of
passenger car approaching..."***

GONINAN

with the
technical
assistance of

 **Pullman
Standard**

will introduce
a new
passenger car
of distinctive
styling into
the Sydney
suburban
network
during 1978



A. GONINAN & CO. LIMITED

P.O. BOX 21, BROADMEADOW, N.S.W. 2292. CABLES: "PLATINUM", NEWCASTLE, AUSTRALIA
PHONE: (049) 61 3811 TELEX: AA 28061

GON/178